JULY 25, 1959
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# Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

SINCE 1901

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Guaranteed Circulation This Issue
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**JUNIOR ACHIEVEMENT**

**An increasing number of telephone companies are sponsoring Junior Achievement companies. Here A. J. Barran (right) president, General Telephone Co. of the Northwest presents Lloyd Wilson of NW General's JA unit regional "Company of the Year" award.**

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# More electronics in XY® Toll Ticketing=

**. . . more profit for you.**

XY Toll Ticketing uses more electronics than other comparable toll ticketing systems.

Widespread utilization of printed circuitry, transistors, and other electronic techniques and principles makes your toll revenue more profitable, because of:

1. *Space economy:* the entire system takes less space because of compact design utilizing economical electronic techniques.
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# FLASHES AND PLUGS

**SAME NAME, DIFFERENT CIRCUIT.** Connecticut is the legal voting place of two Don Irwins. One is a congressman and naturally, gets many Washington telephone calls; the other is a newspaper reporter, home base Washington, who frequently pursues congressmen in the course of doing his job.

Reporter Irwin says that as soon as Freshman Congressman Irwin was sworn into office, the reporter's home telephone jangled with calls from oldtimers who wanted to congratulate him on his election.

Because Representative Irwin settled in Washington too late to get a telephone directory listing, and at home, gets his calls through an apartment switchboard, the reporter, whose telephone is listed, has had many chats with pleasant people whom he does not know, and even at a North Carolina weekend hideaway, he was located by a long distance operator addressing him as Congressman Irwin. To preserve his domestic tranquility, Reporter Irwin sought out Congressman Irwin.

Nice fellow, he learned, the congressman. They met between House rollcalls.

Turns out, the congressman had heard of the reporter—ever since college, when people kept asking him how he found time to work on a newspaper and still keep up with studies and sports and win varsity letters. The congressman studied law, but at one point, almost decided on a newspaper career, he said.

About the telephone calls? Well, the reporter says, "If I didn't know who would get the bill, I might take care of it with the following classified ad:

> "'I can not be responsible for telephone calls for Rep. Donald J. Irwin, D., Conn. His Washington numbers are—such-and-such, extension such-and-such; and home, such-and-such. Constituents who want service call him.'" Signed, Donald McD. Irwin.

•

**ALL IN THE FAMILY.** Sign in a hotel: "Please don't wait to be introduced to your fellow guests. We are all one big happy family. Do not leave valuables in your room."

•

**HURRYING TO SAY "HELLO."** San Francisco, Cal., police cautiously crept up behind a young woman observed acting suspiciously on the Golden Gate Bridge.

On apprehension, the young woman, Mrs. Nancy Bell, told them she had no intention of jumping off. Amused at their concern, she explained that she was merely signalling "Hello" in Morse code with her mirror, to her husband aboard a vessel entering the harbor after a six-month absence.

The message, of course—"Hello, darling."

**CHANGE OF ADDRESS**

Please notify your local postmaster and the Circulation Dept. of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.


Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
*Since 1901*

JULY 25, 1959


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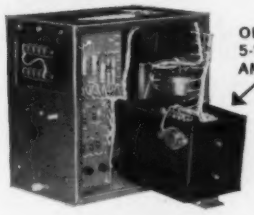
**FIVE IDENTICAL PLUG-IN GENERATOR UNITS**

Five interchangeable frequency generators—each complete with voltage regulator, oscillator, transformers, amplifiers, cut-off circuit. Each individually adjustable for both frequency and voltage. Frequencies stabilized against changes in input voltage, temperature, load.

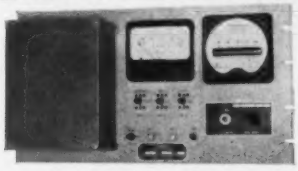
Transistor circuits for long trouble-free life. No moving parts. No routine maintenance. Operates from 50-volt battery at extremely low drain.

**COMMON EQUIPMENT UNIT**




Contains, for all frequencies: ample battery filter, remote control relay, audible ringing tone generator with (optional) 5-watt tone amplifier.

**AUTOMATIC TRANSFER PANEL**

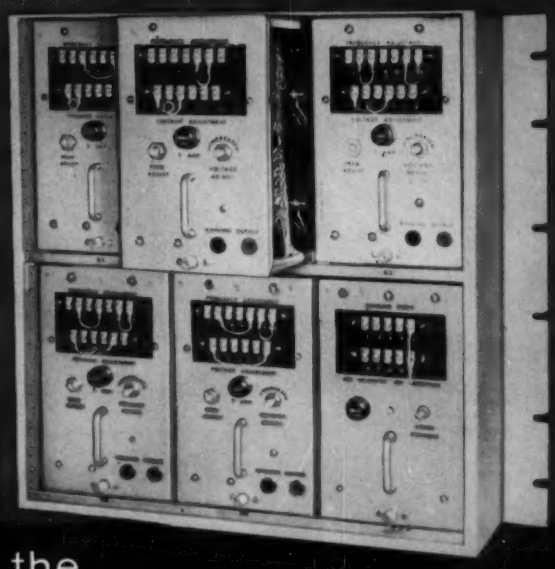


Connects two ringing machines together with either as the main machine, the other as standby. Load is automatically transferred to the standby and alarm is operated on partial or complete failure of the main. Manual transfer possible to check the standby. Either machine supplies load while other is metered for adjustment or tested with simulated ringing failure. Other panels available: portable, manual transfer and supervisory.

**TWO MODELS**
(Conservative ratings)
Model T: output 25 watts per frequency.
Fits 19″ rack, adapts to 23″ and 30″.
Takes only 17½″ vertical rack space.
Model T50: output 50 watts per frequency.

*Write for Bulletin 177A*

# NEW!



the
ideal ringing machine...
THE TRANSISTOR-TYPE
# SUB-CYCLE®

★ **ADJUSTS TO ANY FIVE FREQUENCIES**
adjusts any generator unit to new setting in as little as two minutes.

★ **SELF-PROTECTING**
senses ringing-area shorts circuit.

★ **SINE-WAVE OUTPUT**
...the ideal ringing power.

★ **AUDIBLE RINGING TONE**
...superb for 2-party 20/30 cycles.

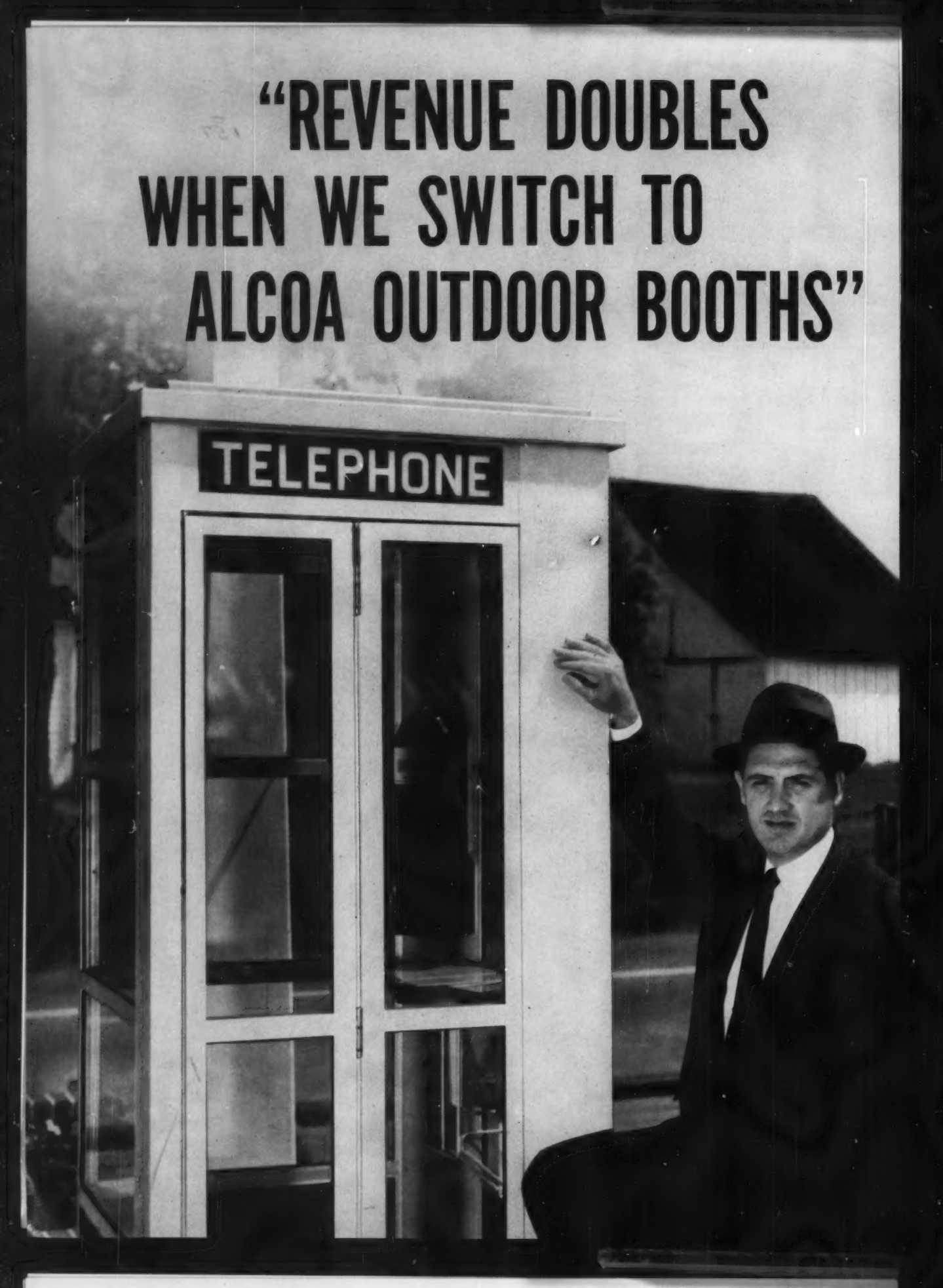
THE ONLY COMPLETE LINE OF POWER EQUIPMENT FOR COMMUNICATIONS

**our equipment is sold through leading telephone distributors**

FLOTROL® SUB-CYCLE®

LORAIN Products Corporation

# "REVENUE DOUBLES WHEN WE SWITCH TO ALCOA OUTDOOR BOOTHS"



## reports John E. Caldwell, of United Telephone Company of Pennsylvania

Thirteen Alcoa outdoor booths are popular stop-off points for both vacationers and residents at historic Gettysburg, Pa.

"In many cases where we have replaced indoor booths with outdoor booths of Alcoa® Aluminum, revenue has jumped 100 per cent or more," says Mr. John E. Caldwell, district manager at Gettysburg for United Telephone Company of Pennsylvania.

"Lots of people driving through this area obviously like to stop at these attractive, well-lighted booths to call ahead for reservations or call home. Local residents also make regular use of them. And we like them, too, because they are easy to erect and require only routine maintenance. With aluminum, no painting is ever necessary and cleaning is fast and simple."

United Telephone Company of Pennsylvania now has 120 Alcoa booths in its system. Like many other telephone companies throughout the country, they have discovered that outdoor booths of Alcoa Aluminum boost revenue and profits and gain immediate customer goodwill. Find out how Alcoa booths can do the same for you. Write for free brochure and ask your jobber to show you the Alcoa Goodwill Kit—the free promotional package that comes with every Alcoa booth. Aluminum Company of America, 1720-U Alcoa Building, Pittsburgh 19, Pennsylvania.

John E. Caldwell, district manager, United Telephone Company of Pennsylvania, shows why Alcoa outdoor booths are setting new revenue records in Gettysburg: a clean, bright appearance that stays that way—thanks to aluminum's inherent corrosion resistance and sturdy construction.

"Alcoa's compact construction gives maximum roominess in minimum space, keeps customers from feeling cramped while making a call."

"Continuous lighting in Alcoa booths gives a safe appearance that creates customer goodwill day and night," says Mr. Caldwell

ALCOA ALUMINUM

*Your Guide to the Best in Aluminum Value*

For exciting drama watch "Alcoa Presents" every Tuesday, ABC-TV, and the Emmy Award winning "Alcoa Theatre," alternate Mondays, NBC-TV

# AE-Lenkurt

## HAS **EVERYTHING** YOU NEED FOR PROFITABLE CIRCUIT GROWTH

**LENKURT SUPERVISION & CONTROL EQUIPMENT, for instance...**

With Lenkurt Supervision & Control Equipment, you can open the door to highly profitable leased-line and extra toll business—*now*.

More and more business and industrial concerns are looking to telemetering and remote control to cut costs and increase efficiency. Lenkurt offers several types of equipment to do this job. For example, there's Type 51B.

Type 51B is designed to operate over the wire or radio facilities which it supervises. When linked to any wire line or carrier channel, up to 80 remote indications can be supervised, and 90 remote operations can be controlled from a single control center.

For full details ask for Circular 51B-P4.

Whatever *your* expansion plans may include, AE-Lenkurt has what you need—plus the talent to handle the entire project from start to finish.

AE-Lenkurt services are flexible, and backed by experienced *telephone* engineers who are fully acquainted with the capabilities of your present equipment. They'll evaluate your requirements, then recommend the type of equipment that will meet circuit conditions most efficiently and economically over the years. Or, if you wish, they'll provide you with *complete* planning, engineering and installation service that relieves you of all short-range and long-range circuit expansion details.

For more facts on progressive planning for growth, call your Automatic Electric representative, or write T. B. Collins, Director, Carrier & Radio Sales, Automatic Electric Sales Corporation, Northlake, Illinois.

ALL YOUR COMMUNICATIONS NEEDS FROM ONE DEPENDABLE SOURCE

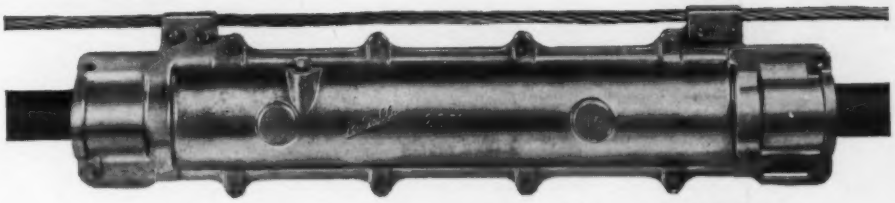
**AUTOMATIC ELECTRIC** GENERAL SYSTEM

Subsidiary of

**GENERAL TELEPHONE & ELECTRONICS**

# Now from Reliable...

## splice cases



For use with lead, Alpeth and Stalpeth sheathed cables up to 1.6" diameter.

## and

## splice case terminals

Single terminal — 6, 11 and 16 pair.
Two terminals, back to back — 12, 17, 22, 27 and 32 pair.
Unprotected or protected.

Reliable ELECTRIC COMPANY

*11333 Addison St. • Franklin Park, Illinois*

Send us your Installation Specification No. 104 and additional information on these splice cases and splice case terminals.

*Name*_____ *Title*_____

*Company*_____

*Street*_____

*City*_____ *Zone*_____ *State*_____

# Show Your Complete Line in

## with LEICH's PABX Sales Kit

Ever have trouble showing and comparing PABX systems to a prospect? Leich's PABX Sales Kit is an excellent solution. It lets you show a prospect Leich's complete line of PABX's in a matter of minutes.

A practical, easy-to-read chart tells at a glance the capacity, type of attendant's cabinet, switchboard, and other information about each of Leich's PABX systems.

Individual brochures help you do a more complete selling job. These brochures cover Leich's popular 40A PABX, other PABX's with keyset turrets, and PABX's with floor-type cabinets.

Write for Leich's PABX Sales Kit today.

**LEICH PABX DIA**

*for faster, more*

| TYPE | LINES | LINKS | CITY TRUNKS | TYPE OF ATTENDANT CABINET |
|---|---|---|---|---|
| **40A** | 40 Not expandable | 4 | 10 | See Fig. B. May be used with without turret. |
| **88A** | 88 Not expandable | 9 | 10 | See Fig. B. May be used with without turret. |
| **100A** | 100 Not expandable | 10 | 10 | See Fig. A |
| **100C** | 100 per bay, expandable | 15 per 100 lines | See brochure | See Fig. A |
| **100T** | 100 per bay, expandable. | 15 per 100 lines | See brochure | See Fig. B or C. May be used with without turret. |

**LEICH**

Subsidiary of GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

# Minutes

## How to Sell Your LEICH PABX Prospects

## TELEPHONE SYSTEMS

*icient business communications*

| SWITCHBOARD UNIT | POWER | TELEPHONE INSTRUMENTS | STANDARD SERVICE FEATURES | OPTIONAL SERVICE FEATURES |
|---|---|---|---|---|
| Steel cabinet with hinged doors front & back. 72" high, 48" wide, 15" deep. All-relay operation. | Ringing & talking supply contained in switchboard unit. Standby batteries, if required, are mounted externally. | Standard telephone instruments are used on all Leich PABX's. Push-buttons & special wiring not required | 2-digit local dialing, local links not tied up on city trunk calls. Consultation & transfer service. (SEE INDIVIDUAL BROCHURE) | A wide variety of optional service features is available on Leich PABX's. (See individual brochures for specific features.) |
| Steel cabinet with sliding doors front & back. 80" high, 90" wide, 15" deep. All-relay operation. | Ringing supply contained in switchboard unit. 48 volt battery & charger or battery eliminator are mounted externally. | | 3-digit local dialing, local links not tied up on city trunk calls. Consultation & transfer service. (SEE INDIVIDUAL BROCHURE) | |
| Steel cabinet with sliding doors front & back. 80" high, 60" wide, 15" deep. All-relay operation. | Ringing supply contained in switchboard unit. 48 volt battery & charger or battery eliminator are mounted externally. | | 3-digit local dialing, local links not tied up on city trunk calls. (SEE INDIVIDUAL BROCHURE) | |
| Steel cabinet with sliding doors front & back. 80" high, 90" wide, 15" deep. Power Bay 87" high, 24" wide. Trunk Bay 87" high, 20½" wide, 15" deep. All-relay operation. | Ringing supply mounted on Power Bay. 48 volt battery & charger or battery eliminator are mounted externally. | | 3-digit local dialing. (SEE INDIVIDUAL BROCHURE) | |
| Steel cabinet with sliding doors front & back. 80" high, 90" wide, 15" deep. Power Bay 87" high, 24" wide. Trunk Bay 87" high, 20½" wide, 15" deep. All-relay operation. | Ringing supply mounted on Power Bay. 48 volt battery & charger or battery eliminator are mounted externally. | | 3-digit local dialing. (SEE INDIVIDUAL BROCHURE) | |






ATTENDANT'S CABINETS

LEICH SALES CORPORATION • 427 WEST RANDOLPH STREET • CHICAGO 6, ILLINOIS

PACIFIC COAST: 11401 W. PICO BLVD., LOS ANGELES 64, CAL.
EAST: 3651 CONNECTICUT AVENUE, YOUNGSTOWN, OHIO
SOUTHWEST: 1227 SLOCUM STREET, DALLAS 7, TEXAS
SOUTHEAST: 5126 SOUTH LOIS ST., TAMPA 11, FLORIDA

**manufacturers of telephones, switchboards and related apparatus since 1907**

Each formula in the Monsanto expanding series of Opalon* Vinyl compounds is based on over ten years of experience in supplying the specialized needs of the Wire and Cable Industry. That's why you can always count on a correct answer to your specific insulation problem. Monsanto Chemical Company, Plastics Division, Springfield 2, Mass.

Monsanto

*OPALON: REG. U. S. PAT. OFF.

**OPALON 1217—OPALON 1218** Inside distribution cable jacketing compounds, with toughness, ease of extrusion, excellent service life.

**OPALON 1102** Primary insulation for urban distribution wire plus jacketing for rural distribution wire, with outstanding weather resistance, excellent low temperature flexibility.

**OPALON 1038** Underground burial cable, with excellent resistance to moisture and long service life.

**OPALON 1101** Semi-rigid primary insulation for switchboard wire. High crush resistance, extrusion ease, for critical operation, excellent printability.

**OPALON 1006** Primary Insulation for inside distribution cable, with good crush resistance, excellent flexibility.

Special Opalon compounds are available. Monsanto has also developed a complete line of polyethylene compounds for wire and cable insulation.

## WHY WE BOUGHT COLLINS MICROWAVE AND CARRIER

Delta County Co-operative Telephone Co.
Mr. O. J. Stone

"In expanding our toll service, economy dictated use of existing open wire lines, plus microwave for two hops in the system. Collins Open Wire Carrier, completely compatible with microwave and cable, gave us the synchronous system we wanted for highest quality service. After a year's experience with Collins Frequency Diversity Microwave and Carrier, we can say without reservation . . . We're glad we bought Collins!"*

* Quoted from a letter written by Mr. Stone before his retirement as manager in June, 1959.

COLLINS

COLLINS RADIO COMPANY • DALLAS • CEDAR RAPIDS • BURBANK

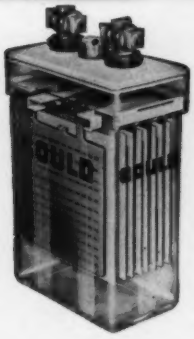
# FOR EVERYTHING YOU NEED

## *Kellogg is close by with fast, dependable*

Nuts, bolts, cable, terminals, batteries ... you'll find everything it takes to run a telephone company under one roof at Kellogg. Eight completely stocked, conveniently located warehouses are only a phone call away. And when you call Kellogg you're talking with trained, experienced telephone men who understand your needs, know exactly what you require. For telephony's most complete source of dependable equipment, such as shown on these pages, and fast, efficient service ... call your Kellogg representative.

KELLOGG
Communications Division of IT&T
CHICAGO, ILLINOIS

**Kellogg Switchboard and Supply Company**
**6650 South Cicero Avenue, Chicago 38, Illinois**
**Communications Division of**
**International Telephone and Telegraph Corporation**




**Outstanding Battery Performance** is yours when you choose Gould Planté Batteries. Thick, grooved, pure lead positive plates give many years of trouble-free service! Made by GOULD-NATIONAL BATTERIES, INC., the finest money can buy.

**Simple and Effective!** The quick, easy, positive way to dry splices in lead-covered cable is to sprinkle Drierite Dessicant granules in among the conductors. This W. A. HAMMOND DRIERITE COMPANY product will not harm the sheath, conductors, or insulation.

**Kellogg's Standard Outside Plant Handbook** now available at special price while quantities last. Reduced to $2.75 a copy, with ten or more copies priced at $2.50 each. Every phase of outside plant telephone pole line construction is covered in book.

**Simple, Quick, and Sure!**—For splicing two wires of different sizes, there's nothing simpler than using Nicopress reducing sleeves and the Nicopress 31-DC tool. Splices are always tight and strong. Made by the NATIONAL TELEPHONE SUPPLY COMPANY.

**S-5 Sub-Cycle for Synchronomic ringing.** Generates 30, 42, 54, and 66 cycles, plus a fifth frequency. Ringing frequencies are locked to the A-C line frequency. Provides maintenance-free operation. Made by LORAIN PRODUCTS CORPORATION.

**Cook Cable Coat** eliminates need for taped splices or potting, and can be provided with selective pair protection. Terminal blocks for making cable conductor taps are filled with plastic resin. Cutting and splicing are eliminated, and connections are made by tapping onto specified conductors. COOK ELECTRIC COMPANY.

# ..EVERY DAY...Call KELLOGG

## complete service

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**KANSAS:**
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**NEW YORK:**
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**OHIO:**
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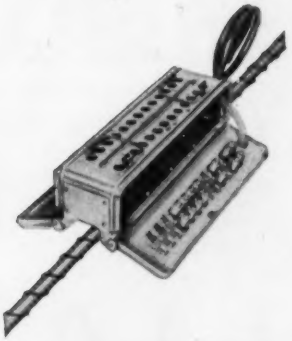
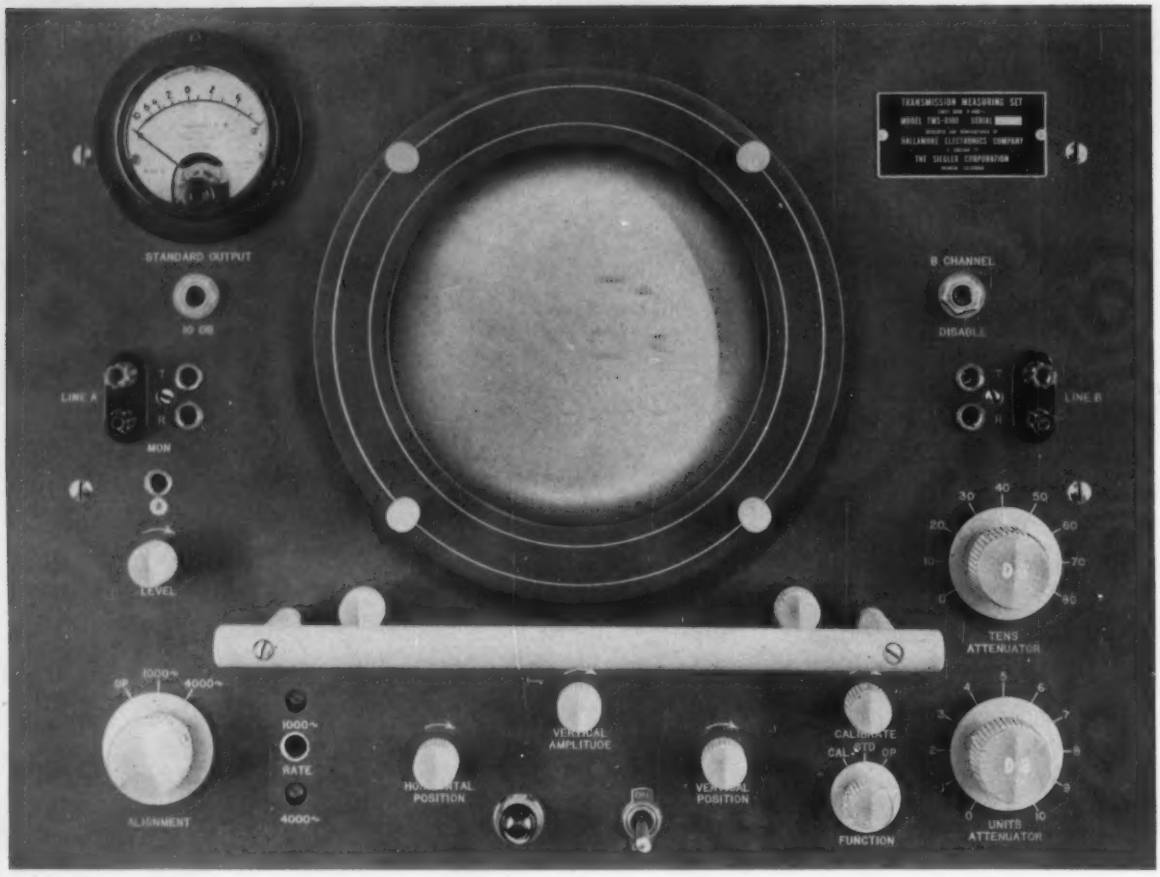
**TEXAS:**
515 Turtle Creek Blvd., Dallas 7, Texas, RIverside 7-5191.

**EXPORT:**
17 Prospect Street, Passaic, N. J., PRescott 3-5100.

**Longer spans, lower costs. Crapo HTL-195,** the new extra high tensile, lower resistance telephone line wire makes possible up to 40% reduction in pole structures with marked savings in construction costs. Developed and manufactured by INDIANA STEEL & WIRE COMPANY, INC.



**The 26 Pair Cook Stranterm** is available with plastic or lead cable stubs. Only strand mounted Cable Terminal designed for a flexible system of selective discharger protection. Can be supplied with either Minigap or Mytigap arresters. COOK ELECTRIC COMPANY.




# A NEW APPROACH TO TRANSMISSION MEASUREMENT

**Requirement:** Examine transmission characteristics of a circuit and associated apparatus within a prescribed frequency band and display these characteristics visually. **Solution:** TMI-0100 Swept Band Transmission Measuring set, conceived and developed at the Anaheim laboratories of Hallamore Electronics Company.

This new unit continually displays the input and output voltages and measures their ratio by the simple manipulation of step attenuators. Photographs of the traces provide a permanent record. Field tested applications include: 1. Measurement of loss vs. frequency characteristics of physical line facilities in frequency range from 150 cps to 4000 cps. 2. Measurements of repeater or amplifier gain. 3. Determination of trans-hybrid losses. 4. Location of load faults. Detailed descriptive material will be sent promptly to you upon your request to Hallamore Electronics Company, Telephone Department, 714 North Brookhurst Street, Anaheim, California. A Division of The Siegler Corporation.

# HALLAMORE

# ESCO RINGING EQUIPMENT

MEMBER

**ADDITIONAL ESCO FEATURES (details in future ads pictured on the dial) — further explain why Esco components are included in installations of prominent suppliers like Automatic Electric Co., Federal Telephone and Radio Corp., Kellogg Switchboard and Supply Co., Leich Sales Corp., and Stromberg-Carlson Co.**

## permanent, precise alignment gives a quieter, smoother drive

The whispering-soft, velvet-smooth operation of an ESCO ringing assembly comes from its unique drive design. To begin with, motors and driven units are factory mounted in precise alignment. They never need to be touched again, even to change belts. An idler pulley provides initial belt tension. To change belts, it is only necessary to loosen the idler pulley, remove old belts from the sheaves, and replace with new ones. By keeping accurate alignment, belts last longer.

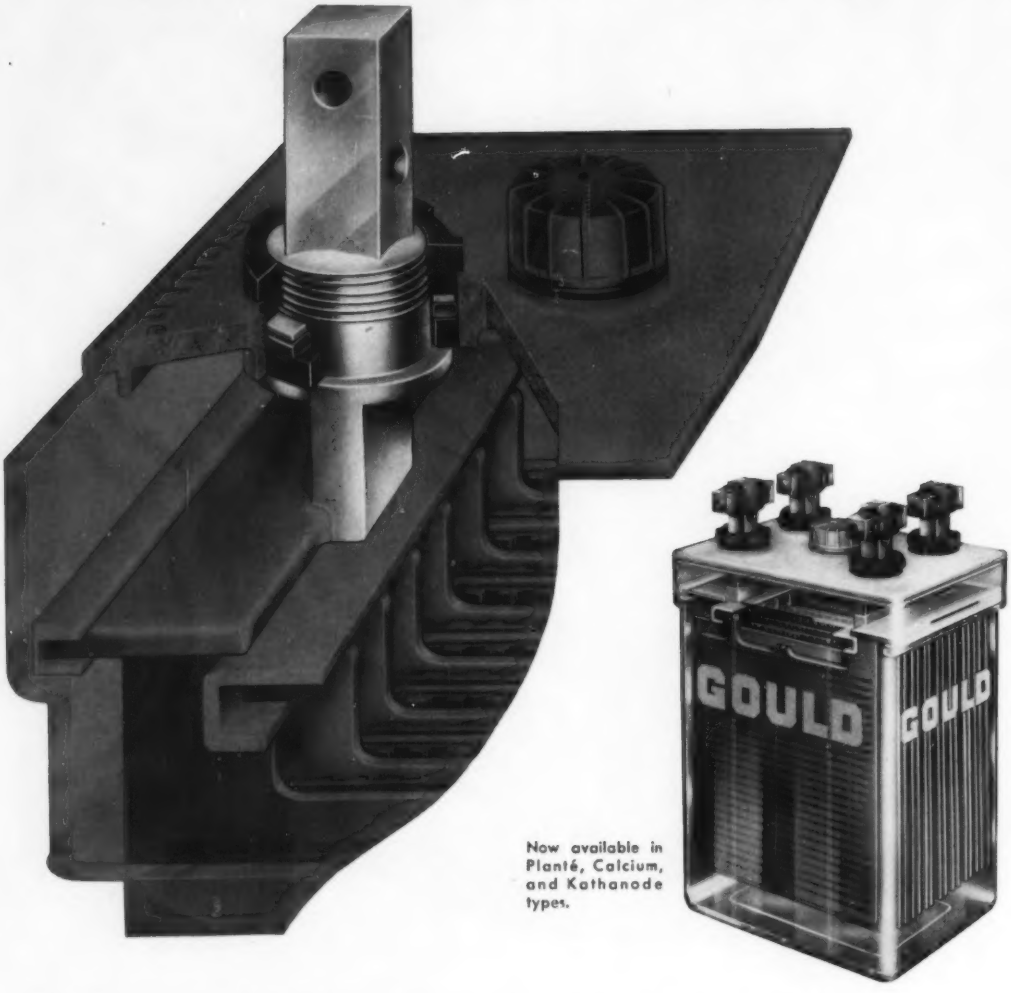
Less friction, lighter bearing loads, and less driving power are some mechanical advantages of this outstanding drive system. They add up to longer life, smoother operation and less maintenance for you.

But care and attention to important details like this is just one of many reasons why ESCO is preferred by engineers, suppliers, and users alike. The full facts are yours for the asking in our new brochure, ESCO RINGING EQUPMENT. Send for it today.

*Write today for full information*

**ELECTRIC SPECIALTY CO.**
**176 South Street, Stamford, Connecticut**

# *new* **gould** *stationary battery defies electrolyte seepage!*




Now available in Planté, Calcium, and Kathanode types.

**New Silicone O-ring post seal** expands under compression, forming a tight seal against the cover wall of the battery. This prevents escape of electrolyte, eliminates discoloration of battery cover. Corrosion, too, is greatly reduced since Silicone is impervious to chemicals.

**Save Space.** Gould's new Stationary Batteries in Plastrite Jars save you 30-40% more floor space; this means you can increase your battery room capacity without increasing the room size. Lightweight Plastrite Jars have great impact resistance, are unharmed by normal handling and shipment.

**Take advantage of the benefits** offered by Gould's new Stationary Batteries in Plastrite Jars. They're available in Planté, Calcium, and Kathanode types . . . in capacities for every need. Write today for new illustrated catalogs, or call your local Gould office listed under "Batteries-Industrial" in the "Yellow Pages." Gould-National Batteries, Inc., Trenton 7, N. J.

*More Power to you from* **gould**

# IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

**Senate sub-committee reports bill which would drastically affect small exchange operator exemption in wage-hour law. Twelve GSA employes get bonus melon in SAGE cost reduction, resulting in FCC order cutting private line charges. California commission refuses PT&T permission to withdraw private mobile lease-maintenance service. U. S. court grants damages to private power company in Dixon-Yates case.**

IT LOOKS now as if the United States Senate, or at least its Committee on Labor and Education, is going to make mincemeat out of the exemption in the Wage Hour Law for small telephone exchange operators. Last week a sub-committee reported to the full Senate Labor Committee a number of proposed amendments to the Fair Labor Standards Act in a bill (S. 1046), sponsored by Senators Kennedy (Mass.), Morse (Ore.), Clark (Pa.), McNamara (Mich.), Murray (Mont.), Randolph (W. Va.), and Williams (N. J.)—all Democrats.

When the Senate takes this bill up, probably around the first of August, it will probably pass without too much change, although you never can tell in the Senate where amendments from the floor are not limited. The small telephone exchange operators' provision is part of a number of amendments in the bill designed to increase the coverage of the Wage-Hour Law, boost the minimum wage, and knock down the maximum hours allowed at regular pay scale.

Here is, in brief, what the Senate sub-committee bill would do about all this: First of all it would eliminate the provisions in the present law which exempt the wages of telephone operators at exchanges of less than 750 stations from compliance with the minimum wage requirements. Instead, the proposed Senate amendments would narrow the restriction *to include only switchboard operators on exchanges located in employes' own homes.* Furthermore, even this exemption would not be available to telephone companies whose operations grossed in excess of $750,000 a year. The latter restriction would remove any real further benefit of the exemption for the Bell System and the larger Independent companies, because only very small company operations could qualify at less than $750,000 in gross annual receipts.

There were also other Senate amendments which would increase the hourly minimum wage rate from the present level of $1.00 to $1.25 an hour in progressive stages over a four-year period. The maximum straight time hours permitted would likewise be progressively reduced from 46 hours a week to 40 hours a week within a four-year period. Local transit and other retail service establishments — including hotels, restaurants, and theaters—would likewise be brought under the Wage Hour Law for the first time.

Renewed efforts will be made by telephone companies and others to restore at least, in part, the present exemption benefits when the bill reaches the Senate floor and also in the House. The House Labor Committee, under Representative Barden (D., N. C.), is moving less rapidly and may not hold hearings in time for committee action before the end of the session. But, there remains another year and another session in 1960 during which the House could complete action on this measure. Because it is a Democratic platform pledge and because President Eisenhower is supposed to favor the bill as a whole, it could be that time is finally running out for the small exchange telephone operators' wages exemption. True, this was said before in this department and nothing happened.

### *Tipping Policemen*

The General Services Administration (GSA), the housekeeping department for all the federal establishments, made "news" the other day when it was learned that 12 of its employes had split a $10,000 bonus melon because they helped to get a reduction in the Bell System telephone rates in connection with the Air Force's Semi-Automatic Ground Environment (SAGE) system set up to detect enemy planes. The "news" got a good play in one of the Washington newspapers when a friendly columnist, who writes a daily piece on government employes, by strange coincidence, featured it as an exclusive.

The citation of the 12 employes of GSA, whose individual honorariums ranged from $3,000 for the attorney in charge of the case down to $200 for a couple of lady secretaries, reads as follows:

"For exceptional accomplishment resulting in estimated savings to the Government of more than 100 million dollars over a 10-year period, the 12 employes named above have been recognized by the largest group monetary award ever given in GSA. A total award of $10,000 was recommended by the administrator and approved by the Civil Service Commission. Individual shares range from $200 to $3,000.

"SAGE is the first letter abbreviation for 'Semi-Automatic Ground Environment,' the system of communications contracted for by the Air Force to shorten the time interval between the discovery of attacking enemy aircraft and the use of planes and missiles to bring them down.

"The use of private line telephone services for this purpose involves tremendous costs to the government. GSA's role in the project, assigned by the administrator to this group, was to represent the government's interests in rate proceedings before federal, state, and local regulatory bodies. The extraordinary efforts of all the members extending over a two-year period resulted in rate reductions and consequent savings to the government far beyond expectations."

This reference is to a Federal Communications Commission order reducing certain private line charges pending a decision on a broader private line rate case. Aside from the fact that the so-called benefits to the government may be quite temporary and may be offset by higher rates which the government may have to pay for telephone service in other classifications, the idea of the federal government handing out bonuses to government employes for doing their sworn duty may strike some as a little unusual — something like tipping a policeman, or paying a salaried fireman, for putting out a fire in your house.

There is nothing illegal about it, of course. The bonus payments were made from a $50,000 fund set aside by the President from his emergency fund for national defense under a special law (Public Law 968 of the 84th Congress). The 12 employes are members of GSA's special task force for SAGE and assigned to act for the Department of Defense in seeking lower rates before the Federal Communications Commission for telephone lines leased in connection with the early warning system for the North American Continent.

The question might be asked in connection with such bonus payments, however, whether the incentive supplied might have a tendency to encourage government employes to hatch rate cases regardless of the over-all equities involved. Government employes who start such litigation have everything to gain and nothing to lose. Whether they win or lose, their salaries are going right on. But if they should win, even a temporary advantage by way of a rate reclassification, they could look forward to some melon cutting.

The incentive system for getting a better than average performance from government employes has a lot to commend it. The idea is not new and is widely used in private industry. It probably goes back to the old "suggestion box" used by many companies to obtain new ideas from employes on how to save a company money through operating economies or increased production or improvements in the end-product. Periodic prizes for the best suggestions arouse healthy competition among employes and more intense interest in the company's economic welfare and efficient operation.

As a matter of fact the incentive-of-an-award program used by the Civil Service Commission to distribute such melons among employes has two classifications: One comprises just such a "suggestion" program. The other, under which the GSA telephone company rate case employes picked up their bonus, comes under the second classification of "superior performance awards." Presumably this refers to activities by government employes above and beyond the actual call of duty, or something like that. As between these two classes of awards, GSA and about 45 other government departments and bureaus with similar programs, distribute about six times as much for "superior performance awards," as for "suggestions."

Although it involves an entirely different form of activity, these bonuses for winning utility rates cases (or appearing to win them) recall another form of rate case agitation which has not found much favor with regulatory commissions. This is the contingency fee operator, who goes from town to town promising to obtain large sums in rebates on disputed bills in return for a part of the benefits. This type of activity is more often encountered by gas and electric utilities than by telephone companies. Such operators may call themselves "rate adjustment bureaus" or other fancy names. But, the gas and electric companies, which have had experience with them, sometimes call them "bill snatchers."

What they do is to scout around until they find some large customer—such as an industrial manufacturer or chain store operator—who for some reason or another is taking service under a rate classification which is less advantageous than some other available classification. This sometimes happens, especially when the load characteristics change from time to time. The "bill

*(Please turn to page 58)*

## REA Approves Two Loans

**Two telephone loans approved by the Rural Electrification Administration during the week of July 6 will enable the borrowers to furnish new or improved service for 4,203 subscribers, as follows:**

**Calhoun County Telephone Co., Homer, Mich.; $1,061,000; July 7.**

**These funds will enable the borrower to improve service for 1,462 existing subscribers and to furnish initial service to 544 subscribers. The subscribers who will get improved service now receive limited dial service from the Rollin Telephone Co., Addison, which the borrower proposes to acquire and consolidate. Funds also are included in this loan to provide initial service to an additional 232 subscribers in the borrower's present area and to complete the authorized system.**

**A new automatic central office will be constructed at Addison to replace existing facilities there. The Calhoun County company proposes to include space for limited commercial facilities in the Addison building to serve that portion of the system.**

**REA loans to this borrower now total $1,719,000 which will make possible new and improved service for 4,024 subscribers. Two of the proposed three exchanges are now providing dial service to approximately 1,580 subscribers.**

**Robert J. Daverman is president of the Calhoun County company.**

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**South Central Rural Telephone Cooperative Corp., Glasgow, Ky.; $1,100,000; July 9.**

**These funds will enable the borrower to provide facilities to furnish initial service to 1,970 subscribers. A small portion of the loan will be used to complete the authorized system.**

**REA loans to the South Central cooperative now total $4,323,000 which will make possible new and improved service to 7,892 subscribers. The completed system will consist of 15 exchanges, 12 of which are in operation and furnishing dial service to approximately 4,650 subscribers. The borrower expects to cutover the three remaining exchanges within a few months.**

**Keith Jewell is president and Daniel B. Corman is manager of the South Central cooperative.**

# THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

YOUR WRITER recently spent a most enjoyable day at the Point Breeze cable manufacturing plant of the Western Electric Co. in Baltimore, Md. While there we also enjoyed several hours with our long-time friend, C. T. (Tiny) Wyman, of the Bell Telephone Laboratories. These laboratories maintain an office in this plant and are concerned with the development of wire and cable. It so happened that the day of our visit fell on the 30th anniversary for Tiny with the laboratories. We sincerely hope that his second 30 years with the laboratories will prove as enjoyable and as productive as his first 30.

We had a look at various tests being conducted on wire and cable in these laboratories that proved extremely interesting. Several types of wire were being subjected to continuous tests to determine their electrical characteristics. The results are recorded on graphs. Samples are then buried at the Georgia and Arizona field trial stations.

A part of each sample will be dug up in one year's time to determine the rate of deterioration. This rate will determine the interval of further sampling and test of the buried plant.

Test sets, such as a Wheatstone bridge, balance automatically and punch the reading on IBM cards. Data from various tests are then programmed into a computer to provide the required information for numerous studies.

We also had the pleasure of examining a new type of main frame protector designed to replace the conventional carbon block and heat coil arrangement that has been standard the past 50 or more years.

This new protector is made up in strips of 100-pair that mount in the same main frame space as the conventional protectors. The open space cutout and the heat coil are mounted in a plug.

Two plugs of a pair then mount in bayonet sockets in the protector strip. Turn the plugs a quarter turn and the circuit opens.

Each 100-pair protector strip has a length of shielded plastic cable connected to it in the factory. This cable is formed and laced and connected to outside punchings on the protector strip. If the main frame is 300-pair high, three 100-pair strips are mounted on each vertical and the three 100-pair cables are extended into the cable vault.

Here, a splicing chamber is used to connect the three protector cables into the distribution cable. The cable pair and the jumper wires are both connected to the new main frame protectors by the wire wrap method. The connections are not soldered.

Cables in the central office vault are not pressurized. A gas plug is normally placed in the main distribution cables just inside the cable vault. It is understood that in some new exchanges the cable vault and the power equipment occupy the same room in the basement. It is obvious that the savings in labor will be tremendous with the use of this new material and the improved methods of installation.

We have visited many cable manufacturing plants down through the years but a trip through one still proves extremely interesting.

On this trip, we started where the raw plastic material is received from the freight cars or trucks in 10,000-pound plastic drums. It is then forced through overhead pipes under air pressure to the various mixing vats throughout the plant. Color is added as necessary to meet the various code requirements.

We followed copper wire as it was drawn from ⅜-inch stock and reduced to the fine gauges used in cable conductors. After leaving the drawing dies it is run through annealing ovens before being placed on spools and made ready to have the insulation applied.

The insulation of cable conductor wire with plastic is a most interesting process to watch. The pairing of the wires and the forming of the cable core is even more interesting. We shall never cease to marvel at the fact that so much even-count cable can be manufactured without losing a pair. This does not mean that they never lose a pair in the manufacturing process, but it is not often.

We were impressed by the small number of people required to operate this large plant. Mechanization has taken over most of the routine tasks. Aluminum tape, used to shield certain type cable, is welded automatically to a new roll when the one in use is used up. The sheath on plastic cable is measured automatically and this data recorded as it leaves the machine.

Neither could one fail to be impressed by the good housekeeping in this modern plant. Everything moves smoothly without rush or confusion. There is no clutter in the aisles and every safety precaution is observed. We visitors were required to wear safety glasses with side shields while touring the plant.

It is informally understood that all four cable manufacturing plants of the Western Electric Co. are operating at full capacity but are unable to meet the total requirements of the Bell System. Western Electric is continuing the purchase of large quantities of cable from concerns outside its organization.

Our day in this Baltimore Point Breeze plant proved both interesting and instructive. It also convinced us that hard wire circuits will be with us for a long time into the future, and that their use will be increased in numbers. To all old wire men, this is certain to be good news.

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We are told that less than 100 years ago, American labor received about 38 per cent of our total national income. Today that share is more than 85 per cent.

ITT CABLE
ITT CABLE RINGS THE

# *Exceeds all standards!*

**ITT Lead-Sheathed Cable, long in use throughout the United States, is available to all independent telephone companies.**

**ITT Cable exceeds every exacting standard of telephony, it features unit and layer construction. The copper conductor and paper insulation is furnished by the largest U. S. supplier of these commodities. ITT Cable (aerial or direct burial) is available in all gauges—19, 22, 24 and 26. All reels are disposable to eliminate additional costs involved in returns.**

**Backed by both Kellogg and the world-wide facilities of International Telephone and Telegraph Corporation, you will find this cable exceeds the high standards of modern communications.**

**Ask your Kellogg Regional Office for a comparison of technical specifications against your present supplier of cable.**

## *8 billion conductor feet in USE in U.S.A.*

SERVING THE LARGEST SINGLE TELEPHONE SYSTEM!

| Basic Specifications | 26 AWG | 24 AWG | 22 AWG | 19 AWG |
|---|---|---|---|---|
| **Sheath:** lead with 1% antimony | | | | |
| **Conductor:** pure copper wire | | | | |
| **Conductor Resistance** max. ohms/mile @ 20°C | 230 | 145 | 92 | 46 |
| **Mutual Capacitance** 900 cycles A.C., mfd/mile, max. | 0.080 | 0.080 | 0.090 | 0.084 |
| **Capacitance Unbalance** 900 cycles A.C., micro-microfarads | * | * | at 22 AWG: up to 1000′—100; 1001′ to 2000′—150; 2001′ and longer—200<br>at 19 AWG: up to 1000′—100; 1001′ to 2000′—150; 2001′ and longer—200 | |
| **Dielectric Strength:** 60 cycles A.C., for 2 sec., volts rms | | | | |
| conductor-to- conductor-to- sheath | 355 | 355 | 355 | 500 |
| core-to- sheath | 850 | 1000 | 1000 | 1000 |

**Insulation Resistance:** not less than 1,000 megohm-miles at 60°F measured with a D.C. potential of 100 to 550 volts.

*not required, except if adjacent pairs are found with like lengths of twist when the 900 cycle A.C. capacitance unbalance shall not exceed 400 micro-microfarads.

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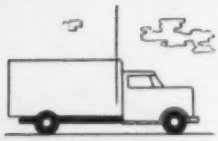
**KELLOGG** Communications Division of IT&T

**Kellogg Switchboard and Supply Company, 6650 South Cicero Avenue, Chicago 38, Illinois**
**Communications Division of International Telephone and Telegraph Corporation.**

**Regional Offices and Warehouses: †**
**CALIFORNIA:** 23 Broderick Road, Burlingame, Calif., OXford 7-5780.
**GEORGIA:** 1594 Southland Circle, N.W., Atlanta 18, Ga., SYcamore 4-2441.
**ILLINOIS:** 4600 So. Tripp Ave., Chicago 32, Illinois, CLiffside 4-4300.
**KANSAS:** 7th & Sunshine Road, Kansas City 15, Kansas, MAyfair 1-4418.
**MINNESOTA:** 6100 Excelsior Blvd., Minneapolis 16, Minn., West 9-6715.
**NEW YORK:** 327 North West Street, Syracuse, N. Y., HArrison 2-9251.
**OHIO:** 1555 West Fourth Street, Mansfield, Ohio, LAfayette 4-6511.
**TEXAS:** 1515 Turtle Creek Blvd., Dallas 7, Texas, RIverside 7-5191.
**EXPORT:** 157 Prospect Street, Passaic, N. J., PRescott 3-5100.

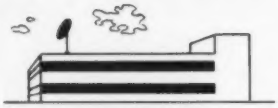
† *Major inventories are maintained at four strategic warehouses in New York, Chicago, Kansas City (Kan.), and Burlingame, Calif., to guarantee ready access and prompt delivery.*

# Dial ANY Station on ANY Party-Line with SECODE



MOBILE RADIO

WIRE AND CARRIER CURRENT



MICROWAVE

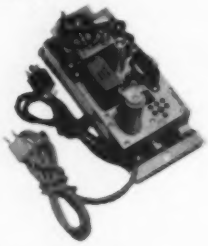
Secode lets you dial one party out of many on all types of multi-party talking circuits. Secode handles any number of parties or stations on the circuit—over 28 million code combinations possible. No false triggering by voice or noise.

You can also call parties by groups as well as individually.
Secode provides a complete line of selective signaling equipment. Let us know your needs and we'll be happy to help plan your system.

## SELECTIVE SIGNALING FOR PRIVATE RADIO SYSTEMS

Provides dialing from dispatcher to car, car to dispatcher, and car to car.

**Base Code Sender TGS-715B**
Works with any make of radio transmitter. The dial keys a tone generator, transmitting coded tone pulses in conformity with the dialed number. (In-band tone frequency used.)



**Base Decoder RPD-634B**
For use with any make of radio receiver. Intercepts and decodes tone pulses sent by mobile, operating call indicator head.

### BASE CALL HEAD

**CIH-6** • Completes speaker circuit and operates indicator light which stays lit.

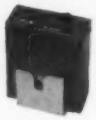
**Mobile Code Sender TGS-715M**
Similar to Base Code Sender. Mounts under dash of vehicle. Permits drivers to select base stations and control points, as well as control apparatus in response to dialed commands.

**Mobile Decoder RPD-634M**
Similar to Base Decoder. Intercepts and decodes only those tone pulses assigned to the called unit.

### MOBILE CALL HEADS

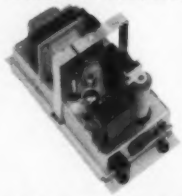
**CIH-3** • Buzzer sounds momentarily, recall lamp stays lit until mobile operator acknowledges call. Mounts on dash.

**CIH-4** • Similar to CIH-3, except with microphone holder and hookswitch.

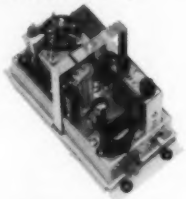


**CIH-5** • Similar to CIH-3, except with telephone handset holder and hookswitch.

## SELECTIVE SIGNALING FOR ALL 600-OHM TELEPHONE CIRCUITS



**Tone Generator TGS-720** • Similar to 715-B Code Sender, but with external dial. Designed for such telephone circuits as telephone wire, carrier current and microwave circuits.



**Pulse Tone Decoder RPD-620** • Similar to 634B but with higher sensitivity. Takes tone input directly from telephone circuit at any level from −30 dbm to +10 dbm.

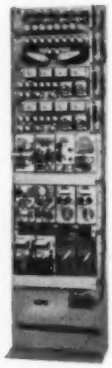
## SELECTIVE SIGNALING FOR MOBILE TELEPHONE SERVICE

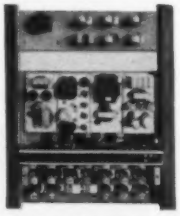
New subscribers can be added by connecting mobile radiotelephones with manual or automatic exchanges. Mobile users get standard dial telephone service. Secode systems are fully compatible with present Bell mobile telephone service (MTS).

**COT-1 For Fully Automatic Dialing— No Operator Needed**
Connects an automatic dial exchange at line level to base station radio equipment. Provides for toll-ticketing and message unit counting by automatically identifying each mobile station. COT-3 is similar to COT-1 but designed for exchanges which do not use toll or message unit counting.

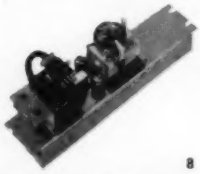
Mobile equipment consists of 801 decoder, identifying code sender, and MCU-200 (see photo) control head.

**MCU-200** • Single unit in driver's compartment contains dial and all control equipment. Handset holder retains handset under severe jolting on rough roads.





**COT-2 Where Operators Available**
For exchanges which have operators to dial mobiles. Uses standard shelf dial; radio system is just another jack on the board. Contains all equipment needed to connect exchange and radio system.



**2-Tone Decoder RPD-801**
Intercepts and decodes tone pulses sent from central office.

**MCU-100** • Basically similar to MCU-200 but without dial. Subscriber calls operator directly.

8

## SECODE CORPORATION

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BY HAROLD B. McKAY, ELECTRONICS EDITOR

## SLOW SCAN TELEVISION

THE visit of Queen Elizabeth to Canada and the U. S. last month was the occasion for a tryout of a slow-scan television technique which promises a means of sending TV across the oceans. The system uses film at both ends. That is, the event is filmed and then the image on the film is transmitted over a telephone circuit to the distant end, where a new film is exposed by the electrical impulses. The new film can then be used by a television station to show the event to the public.

Of course, there must be a time delay between the event and the viewing by the TV set owner, but this time, by the new method, will be much shorter than now required to fly films across the ocean.

The system can be thought of as similar to the "wirephoto" or "telephotograph" system, long used by newspapers to send still pictures across the country. This system uses ordinary telephone channels. A motion picture film could be transmitted by similar means. In effect it would amount to sending the pictures over the wires one at a time. This amounts to sending the film at a much slower rate than the rate at which the action took place, hence there must be a delay between the taking and the actual viewing of the picture.

This may be regarded as a type of slow-scan TV. It promises a means whereby events on the other side of the world can be shown to TV viewers a short time after they occur.

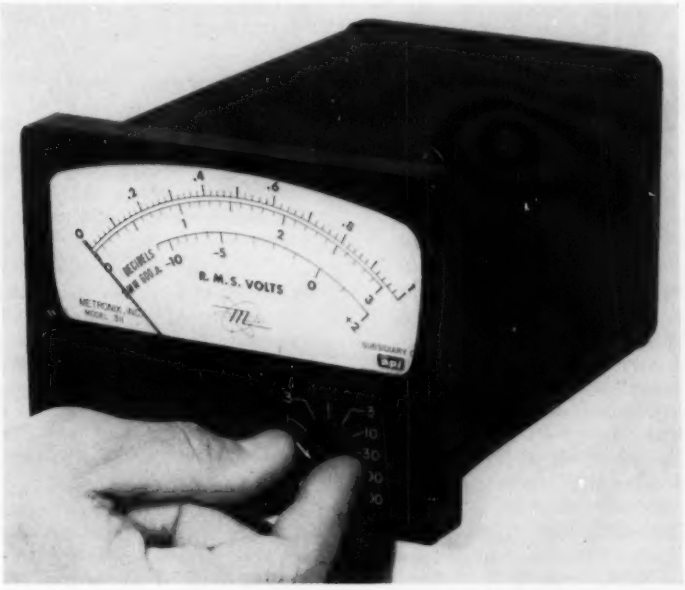
According to A.T.&T.'s Long Lines Department, which made the experiments with the British Broadcasting Corp., one minute of film takes about 100 minutes to transmit, at a rate of one frame every eight seconds.

## ELECTRONIC VOLTMETER

WHEN miniaturization techniques are applied to instruments, some interesting equipment results. The traditional vacuum tube voltmeter, or electronic voltmeter has been a rather heavy instrument, because of its power supply and other components. New techniques now make it possible to build an electronic instrument so small that it can be panel mounted. All of the electronic parts can be squeezed in behind the face of the meter.

A recent instrument made by Metronix, Inc., has an input impedance of 5 megohms, covers a frequency range of 20 cps to 250 kc, and reads from 10 millivolts to 300 volts.

Someday, somebody will build these things right into a telephone carrier bay, so a repairman will not have to carry around a trunk-full of test equipment.




*This Metronix electronic voltmeter will measure voltages at carrier frequencies. Miniaturization gets all electronic parts in the meter case, and permits panel mounting.*

## MOBILE RADIO

THE Junction City (Kan.) Telephone Co has joined the growing list of Independent telephone companies which are using radio. This company now has five of their vehicles equipped with radio. According to Plant Superintendent Thomas Fegan, as other trucks and cars are replaced with units having 12-volt battery systems, they too will be radio equipped. A total of 12 vehicles using transistorized 25-watt radios, will ultimately be in service.

The central or base station is a 60-watt transmitter located in the switchroom, which feeds an antenna 80 feet above the street. The radio equipment is not connected to the telephone system. It is operated by a remote control unit near the wire chief and testdesk in the switchroom.

A recent innovation is the use of a modified Stromberg-Carlson handset, which contains a small speaker where the dial is normally located. One of these instruments is provided for the chief operator and one for the manager. These sets are connected to the radio. The speakers are furnished with volume controls and when the receiver is lifted from the hook, the speaker is silenced completely. A push-to-talk handset is used.

The special instruments will normally be used when maintenance crews are working on nights or weekends. Only at these times will the supervisor or chief operator be required to use the radio.

Maintenance of the radio equipment is on a contract basis, which provides for two visits a month by a radio service man. Trouble in mobile units ordinarily can be held until the next regular visit of the repairman. Base station trouble, of course, would require a special call-out. Trouble with the system, however, has been virtually non-existent. The company found that it gets solid coverage with the radio within a radius of 25 miles, but has worked cars successfully at 40 miles from the base transmitter.

According to Mr. Fegan, the radio system has proved its worth. Without it, an extra truck and crew would be needed for their operations. Benefits of radio become apparent in cases where a repairman can be called to perform a work operation at a point he would normally be driving by. Without the radio, he would have to be contacted at his next call-in, and would then have to back-track over the mileage just covered. Another instance is that of the case where an installer can be contacted by radio and diverted to a maintenance job which happens to be near his location.

The Junction City Telephone Co.'s operating territory covers an area of about 25 by 40 miles.

## THINK BIG

NOW THAT Alaska is our biggest state, our fellow citizens up there are living up to it in a big way. This manner of thinking and doing has extended to even the telephone companies.

Among the things planned is a radio repeater station on the top of Mt. McKinley, the highest point on the North American continent. This will not be just another repeater station, aimed to relay a message to another station a few miles away. This is going to relay messages to the whole state.

Operating on 450 megacycles, the station will have several channels of carrier on it, but instead of sending these on to a single point, an omni-directional antenna will be used. A channel will then be picked off at Point Barrow, and at other points from there on south.

Of course, it will be quite a trick to plant a package of radio apparatus on the top of a mountain 4 miles high, but the people in the Peninsula Telephone Co. think it can be done with a helicopter. If this seems high for a helicopter, don't worry as these people intend to obtain a helicopter of French manufacture which is supposed to be able to do it.

Anyhow, if this doesn't work, there is a pilot up there who also thinks big, who says he can land a plane on the top of the peak. The repeater station, when and if installed, will be powered by a wind-driven generator.

If all of this seems a big undertaking, it is of comparable size to the things that have already been done. The Independent company at Homer, Alaska started in business about eight years ago with an all-relay PBX which was purchased second-hand from a department store in San Francisco. The outside plant was made up of war surplus field wire and instruments. Interconnection with other telephone facilities in the state was by means of radio.

The time came when the original PBX was no longer big enough to serve as a central office for the rapidly expanding business. So, the company looked around for more equipment, found just what they wanted in North Dakota. They bought a 100 and a 500-line exchange from an Independent telephone company there, then considered the problem of getting 12,800 pounds of switchboard to Alaska.

First they considered renting a truck and hauling the stuff up the Alcan Highway. But, these people do things big — real big. So they hired a C-46 plane with a crew of three (at $340 per hour), which flew down to North Dakota, hoisted the switchboard in with a fork lift, and flew the thing back to Alaska.

All of this seems the natural thing to do by the people in the telephone business in Alaska. A radio license and a pilot's license are just as natural as having a driver's license, and they are a lot more useful.

## OUTER SPACE DEPARTMENT

THE parametric amplifier which was developed by International Telephone & Telegraph Co. for its over-the-horizon radio links really proved its worth in tracking the Pioneer IV space probe. The noise free amplifier extended the range of the tracking equipment by more than 150,000 miles. Without the amplifier, a limit of 50,000 miles was encountered in tracking the missile. The use of the ITT amplifier extended this to 215,000 miles. The signal strength when the test was concluded was -158 dbm.

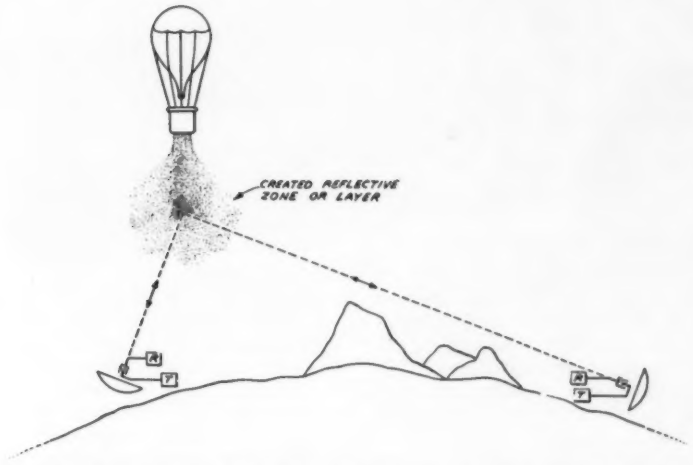
Heart of the amplifier is a silicon diode which functions as a variable reactance in the amplifier circuit.

## STANDARDS

A NEW catalog has just been issued by the American Standards Association, 70 East 45th St., New York 17, N. Y. The standards published by ASA consist of a wide variety of specifications and testing procedures for different kinds of manufactured goods.

Most of these would be of principal concern to manufacturers. However, the standards also contain a large number of specifications for all types of copper wire, and others on safe installation practices. Most of ASA's specifications cost only a few cents each, and many of them could be of advantage to persons who do not have access to larger specification books.

You can get a copy of the catalog by writing to ASA.




*IT&T's idea for over-the-horizon radio communication using a cloud of reflective particles.*

## BEYOND THE HORIZON

IF SOMEBODY comes up with a way to talk into outer space, it will probably be found that International Telephone & Telegraph Corp. already has a patent on it. The idea of using man-made satellites for telephone and TV relays around the earth has already been reported (TELEPHONY, Dec. 6, 1958).

Now a patent, No. 2,871,344, has been issued to Henri Busignies, and assigned to ITT, which contemplates shooting clouds of neutrons, ionized gas, or powdered metal into the atmosphere in order to form a reflective layer which would bounce radio waves beyond the horizon.

Several possible methods are described in the patent, using cannon, aircraft or balloons to carry the reflective material aloft. Also included is a method of using nitric oxide to combine with atmospheric oxygen at great heights to ionize the atmosphere itself for use as a radio reflector. Ideas along these lines have recently been publicized in connection with the satellite and missile program. It is interesting to note that ITT's patent was filed on Sept. 7, 1956.

## BOOKS ABOUT ELECTRONICS

SERVICING TRANSISTOR RADIOS—144 pages. $2.95.

The bulk of this book consists of actual circuit diagrams and parts lists for 70 different models of transistor radios. This material is, of course, of interest mainly to radio repairmen. However, the first few pages of the book contain valuable information on how to shoot trouble on transistor circuits, which could be of real help to a telephone man trying to fix a transistor repeater.

For instance, it is pointed out that polarity of your ohmmeter is important, not only because a reading with one polarity might be 10 times that with the opposite polar-

ity, but because even the low voltage from the meter can damage transistors. Transistor circuits also use low voltage electrolytic condensers which are also easily ruined.

These pages of the book also describe techniques for testing and repairing printed circuit boards.

•

RAPID RADIO REPAIR, by G. Warren Heath, 224 pages. $2.90.

All radio receivers have certain things in common, and the author here has taken advantage of this to develop a straight, matter-of-fact approach to the repairing of radio sets. The book has only four large chapters.

First is "Receivers" in which these common circuits are illustrated and explored.

Next is a chapter on "Techniques" which discusses possible troubles and the approach necessary to fix them. This part contains a thorough analysis of the separate internal circuits, and the various components.

A chapter on "Servicing" is a bold approach to analyzing radio troubles by the symptoms. Every skilled radio man operates in this manner, but it is a difficult thing to reduce experience to writing. This book does it well; so well, in fact, that it lists alphabetically the various trouble symptoms, and the things that can cause the trouble.

A final chapter lists trouble symptoms and cures in chart form for ready reference.

So complete is the detail in this book, that it even tells you the trouble when the radio (the set, not the program) smells like rotten eggs. This means the selenium rectifier is shorted out.

Although aimed at the man who fixes radio sets, this book has a lot of electronic "know-how" for the telephone man who must maintain electronic equipment. It would be a good training text for a man who is willing to learn electronic repair by tinkering with a $10 radio set instead of a $1,000 carrier system.

•

HANDBOOK OF PREFERRED CIRCUITS, NAVY AERONAUTICAL ELECTRONIC EQUIPMENT. (Supt. of Documents, Washington 25, D. C. $1.60.)

This is a supplement to a book published in 1955. While intended to assist in the design of electronic equipment, these circuits can be of real value to that breed of technician who can understand a circuit best when he sees a diagram of it. This book would make a good handbook for even the merely curious. For example, if you are wondering what a servo preamplifier or a phantastron delay circuit is like, just look it up here and you'll get all the information needed to build one for yourself.

•

THE ALGEBRA OF ELECTRONICS, by Chester H. Page. 258 pages illustrated. $8.75.

Any problem can be stated more simply, and solved more easily, if it can be expressed in terms of numbers. The laws of mathematics are unequivocal, and are not subject to different interpretations as are things expressed in mere words. That is why mathematics is the language of science.

The reader who has forgotten most of his math finds himself missing a great deal in modern scientific literature.

This book will help remedy this situation for those interested in electronics. It is a sort of "do-it-yourself" text, by which the reader may regain the mathematical knowledge necessary to correctly understand electronics. While the comment on the jacket declares that, while only high school algebra and simple differential calculus are necessary to thoroughly understand the book, the needs of the non-mathematical reader are recognized, and many graphs and tables are included to explain the results. (Besides, the answers to all the problems are given in the back of the book.)

While there may be no royal road to geometry, the road to electronic algebra is made a lot smoother by this book. Electronic men will find it easy reading, because the problems given, are problems in electronics, and this makes it easy to understand.

•

OFFICIAL REGISTRY OF TRANSPORTATION SYSTEMS. (Communication Engineering Book Co., Monterey, Mass.) Price $4.00.

This is a list of mobile radio stations—those used by taxicabs, railroads, highway trucks, motor carrier and auto emergency vehicles. It is a complete listing by companies and by frequencies. This book is one of four volumes issued each year containing registries of various kinds of radio systems.

Telephone companies which have radio systems, or intend to enter this field should have these books. They enable the radio user to know what other systems are operating nearby, which can be useful from a standpoint of both competition and interference.

You can order these books from TELEPHONY (except the last and the Navy Handbook of Preferred Circuits).

## RADIO CATALOG

ONE of the most complete catalogs in the radio business has just been issued by Collins Radio, Cedar Rapids, Ia. The slick-paper 79-page book is a printer's masterpiece. It shows Collins' complete line of avia-

tion, amateur, microwave and data transmission equipment. Complete units, and component parts are listed.

## INVENTIONS WANTED

THE National Inventors Council of the U. S. Department of Commerce is still looking for inventions. The council is a civilian organization of the government which is charged with the task of bringing to the attention of the military any inventive idea of potential value to national defense. Periodically, it issues a bulletin of "Inventions Wanted by the Armed Forces."

Among the things wanted are:

An accelerated dry battery test method.

An altimeter for use at 500,000 feet.

An instrument to measure angle of attack at hypersonic speeds. Must operate at high temperatures and on the edge of the earth's atmosphere.

A broadband MASER amplifier for use in the microwave region.

All of the problems are not in outer space and the microwave region, however. Among the things needed is something to prevent canned bread from getting stale, and an insect repellent with effects that last long enough for a man to get a night's sleep.

If you have a genius complex, write to the Inventors Council, at Washington, and get a copy of this list.

## INFORMATION THEORY

*INFORMATION* is a rather nebulous term, with different meanings for different people." So states the June issue of the *Lenkurt Demodulator*. The little booklet then goes on to give a real down-to-earth explanation of what information theory means to communications. This is a subject which has been in the background of all recent telephone developments, but it is seldom brought out into the light. Much of information theory is mathematical in nature, and it becomes difficult to twist one's tongue around some of the words used—such as quantize, redundancy and entropy.

However, the *Demodulator* does a fair job of bringing the subject into focus, and even includes a glossary of the strange words used.

You can get on the mailing list of the Demodulator by writing to Lenkurt Electric, San Carlos, Cal.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# Impact of Telephone Communication

## *On the Economies of the Various Geographic Regions of the U. S.*

By ALEXANDER I. WARRINGTON

**PART II. Region 2. Mideast—New York, New Jersey, Pennsylvania, Delaware, Maryland and District of Columbia. See July 18 issue for report on New England.**

### The Mideast

THE (a) per capita income and the (b) estimated population were: (a) 2,268 dollars and (b) 36.6 million in 1956, and (a) 738 dollars and (b) 30.2 millions in 1939. For the period 1939-1956, the percentage increases were (a) 207.3 and (b) 20.8. The per capita income was far above the national average.

The (a) number of households and (b) number of telephones, both expressed in millions, presented this pattern: 1956—(a) 10.5 (b) 16.0, with 29.8 per cent absorbed by business; 1939—(a) 8.0 and (b) 5.7, with 41.2 per cent absorbed by business. The percentage increases were: (a) 32.3, and (b) 181.3.

In manufacturing employment for the period 1939-1956, there was a percentage increase of 160.0 for the region and 180.0 for the nation.

From 1900 to 1939, there was a decrease in manufacturing establishments, in thousands, from 70.5 to 56.6. Manufacturing employment was as follows: 1956, 4,851.0 thousand; 1939, 2,961.4 thousand; 1900, 1,861.7 thousand.

The amount of (a) payrolls and (b) value added by manufacturing presents an interesting comparison. Both are expressed in millions of dollars. In 1956, (a) 21,917.0 and (b) 37,751.0; 1939, (a) 4,122.8 and (b) 7,826.4; 1900 (a) 923.9 and (b) 1,870.2.

Total telephones in 1958 was 16,870.4 thousand, with 4,955.5 thousand for business use, and 11,914.9 for residence use.

The personal income was 87,901 million dollars in 1957.

The states that showed the highest percentage employment in various types of employment were:

| *Type of Employment* | *Highest % of Total Employment* |
|---|---|
| Mining | Pennsylvania |
| Contract construction | Delaware |
| Manufacturing | New Jersey |
| Transportation and other public utilities | Maryland |
| Trade | New York |
| Finance, insurance and real estate | New York |
| Service and misc. | District of Columbia |
| Government | District of Columbia and Maryland |

### New York

The per capita income was 2,395 dollars in 1956 and 825 dollars in 1939, an increase of 190.3 per cent. The per capita income for both years was higher than the average for the region. The population in millions was 16.1 in 1956 and 13.4 in 1939, an increase of 19.6 per cent or a percentage increase about the same as the region.

The (a) number of households and (b) telephones, both in millions, were as follows: 1956: (a) 4.7 and (b) 7.5, of which business accounted for 32.4 per cent; 1939: (a) 3.6 and (b) 2.8, of which business accounted for 46.6 per cent. The percentage increases for 1939-1956 were (a) 30.6 and (b) 168.0.

Manufacturing establishments, in thousands, were 32.6 in 1939 and 35.9 in 1900.

(a) Payrolls, compared to (b) value added by manufacturing, presented this pattern, and both (a) and (b) are in millions of dollars. 1956: (a) 9,403.0 and (b) 15,562.0; 1939 (a) 1,749.6 and (b) 3,313.6; 1900 (a) 414.0 and (b) 853.4.

Telephone service in 1958 consisted of 7,896.9 thousand telephones, with 2,523.7 thousand for business and 5,373.2 thousand for residences.

The personal income was 40,954 million dollars for 1957.

Employment distribution was as follows for 1958:

| *Type of Employment* | *Percentage Distribution* |
|---|---|
| Total employment | 100.0 |
| Mining | 0.1 |
| Contract construction | 4.1 |
| Manufacturing | 31.0 |
| Transportation and other public utilities | 8.2 |
| Trade | 22.3 |
| Finance, insurance and real estate | 7.4 |
| Service and misc. | 14.1 |
| Government | 12.8 |

### New Jersey

The per capita income was above the region, or 2,443 dollars in 1956 and 751 dollars in 1939. The percentage increase was 225.5. The estimated population in millions was 5.4 in 1956 and 4.1 in 1939, an increase of 30.2 per cent, which was above the regional increase.

# in the power field

WITH RAYTHEON

RAYTHEON

*NEWS ABOUT RAYTHEON DEVELOPMENTS IN TELEPHONE POWER SUPPLIES*

Raytheon Company, Industrial Apparatus Division, Magnetic Components Department, Daniel Webster Highway, Hooksett, N. H.


## THOMASTON (GA.) TELEPHONE COMPANY PROVIDES FOR FUTURE EXPANSION

MESSRS. A.M. NEW AND W.M. NEW of Thomaston Telephone Company review specifications of 100-ampere Raytheon RectiChargeR installation.

MAIN DIAL OFFICE AT THOMASTON now serves 4,500 terminals, 2,300 lines of terminal-per-station equipment.

**Raytheon RectiChargeR® installation ready for many times present load**

At Thomaston, Georgia, they know that careful planning can save time and money in selecting new telephone power equipment.

Here, two Raytheon 100-ampere, 48-volt RectiChargeRs were selected in place of two 100-ampere, diverter-pole generators. The new equipment is installed in the main dial office of the Thomaston Telephone Company which now serves 4,500 terminals, 2,300 lines of terminal-per-station equipment. No additional power equipment will be needed even though the current load is increased many times over. Thomaston officials selected RectiChargeRs for their compact size, reliable voltage control and minimum maintenance requirements.

To learn how Raytheon Telephone Power Equipment can reduce your total power systems costs, please contact your telephone equipment supplier or write directly to Raytheon Company, Magnetic Components Department, Hooksett, New Hampshire.

The (a) number of households and (b) number of telephones, both in millions, was in 1956: (a) 1.5 and (b) 2.4; 1939 (a) 1.1 and (b) 0.7. The percentage of business telephones of the total was 26.7 in 1956 and 37.0 in 1939. Percentage increases for 1939 to 1956 were (a) 41.1 and (b) 223.7.

There were 7.4 thousand manufacturing establishments in 1939 and 6.4 thousand in 1900, and New Jersey is the only state in the region showing a gain. Total employes, in thousands, were: 1956, 849.0; 1939, 531.1; 1900, 229.3.

(a) Payrolls in millions of dollars compared to (b) value added by manufacturing, also in millions of dollars, presented the following pattern: 1956: (a) 3,988.0 and (b) 7,392.0; 1939 (a) 753.9 and (b) 1,518.2; 1900 (a) 114.2 and (b) 218.2.

Total telephones in 1958 was 2,560.1 thousand, with 676.8 thousand for business, and 1,883.3 thousand for residences.

The personal income in 1957 was 14,089 million dollars.

The distribution of employment for 1958 was as shown below:

| *Type of Employment* | *Percentage Distribution* |
|---|---|
| Total employment | 100.0 |
| Mining | 0.2 |
| Contract construction | 5.1 |
| Manufacturing | 41.6 |
| Transportation and other public utilities | 8.0 |
| Trade | 18.6 |
| Finance, insurance and real estate | 4.3 |
| Service and misc. | 11.0 |
| Government | 11.2 |

## Pennsylvania

In 1956, per capita income was 2,008 dollars and in 1939 it was 599 dollars, an increase of 235.2 per cent. The estimated population was 11.1 million in 1956 and 9.9 million in 1939. The increase was 12.7 per cent.

The (a) number of households compared with (a) total telephones, both in millions, was: 1956: (a) 3.1 and (b) 4.3, of which business accounted for 25.3 per cent; 1939: (a) 2.5 and (b) 1.5, of which business accounted for 35.1 per cent. For the period 1939 to 56, there was an increase of 19.5 per cent for (a) and 175.8 per cent for (b).

There were 13.1 thousand manufacturing establishments in 1939 and 23.4 thousand in 1900. Employment was 1,567.0 thousand in 1956; 1,015.7 thousand in 1939; and 707.8 thousand in 1900.

(a) Payrolls and (b) value added by manufacturing were, in millions of dollars, as follows: 1956 (a) 6,904.0 and (b) 12,018.0; 1939: (a) 1,356.2 and (b) 2,476.8; 1900: (a) 343.0 and (b) 691.5.

In 1958, total telephones were 4,533.2 thousand, with 1,130.8 thousand for business, and 3,402.4 thousand for residence use.

The personal income in 1957 was 23,327 million dollars.

Employment in 1958 was as shown below:

| *Type of Employment* | *Percentage Distribution* |
|---|---|
| Total employment | 100.0 |
| Mining | 2.3 |
| Contract construction | 4.5 |
| Manufacturing | 39.6 |
| Transportation and other public utilities | 8.1 |
| Trade | 19.3 |
| Finance, insurance and real estate | 3.7 |
| Service and misc. | 11.2 |
| Government | 11.3 |

## Delaware

The per capita income in 1956 was 2,858 dollars and in 1939, 916 dollars, a gain of 212.0 per cent. The estimated population in millions was 0.3 in 1956, 0.2 in 1939, which represented a gain of 44.9 per cent.

The number of households in 1956 was 0.1 million and telephones 0.1 million, of which 29.7 per cent was business telephones. In 1939, business telephones accounted for 38.2 per cent of the total. The gain in telephones from 1939 to 1956, was 286.4 per cent.

Manufacturing establishments totaled 0.4 thousand in 1939 and 0.6 thousand in 1900. Total employes in 1956 numbered 58.0 thousand; 1939, 23.3 thousand; and 1900, 21.7 thousand.

The pattern of (a) payrolls compared with (b) value added by manufacturing was as follows, both expressed in millions of dollars: 1956: (a) 297.0 and (b) 376.0; 1939: (a) 29.1 and (b) 54.0; 1900: (a) 9.7 and (b) 16.5.

In 1958 there were 190.0 thousand telephones, with 55.0 thousand for business use, and 135.0 thousand for residence use.

Personal income for 1957 was 1,200 million dollars.

Employment in 1958 was as follows:

| *Type of Employment* | *Percentage Distribution* |
|---|---|
| Total employment | 100.0 |
| Mining | * |
| Contract construction | 8.0 |
| Manufacturing | 40.5 |
| Transportation and other public utilities | 7.0 |
| Trade | 19.1 |
| Finance, insurance and real estate | 3.5 |
| Service and miscellaneous | 10.3 |
| Government | 11.6 |

*None or less than 0.1 or included elsewhere.

## Maryland

The per capita income in 1956 was 2,102 dollars compared to 661 dollars in 1939, a gain of 218.0 per cent. The estimated population in millions was 2.6 in 1956 and 1.8 in 1939, a gain of 46.5 per cent.

The (a) number of households in millions and (b) number of telephones in millions were as follows: 1956: (a) 0.7 and (b) 1.0, of which 26.9 per cent represented business telephones; 1939: (a) 0.4 and (b) 0.2, of which 40.5 per cent represented business telephones. The increase from 1939 to 56 in total telephones was 266.3 per cent, and households 67.0 per cent.

In manufacturing, there were 2.7 thousand establishments in 1939 compared to 3.8 thousands in 1900. Employes in thousands were as follows: 1956, 277.0; 1939, 166.0; 1900, 100.9.

In millions of dollars (a) payrolls and (b) value added by manufacturing presented this pattern: 1956: (a) 1,218.0 and (b) 2,223.0; 1939: (a) 209.1 and (b) 420.5; 1900: (a) 39.2 and (b) 81.7.

In 1958 there were 1,108.8 thousand telephones, with 291.1 for business use and 817.7 for residence use.

The personal income in 1957 was 6,242 million dollars.

The employment composition is shown below:

| *Type of Employment* | *Percentage Distribution* |
|---|---|
| Total employment | 100.0 |
| Mining | 0.2 |
| Contract construction | 7.5 |
| Manufacturing | 31.0 |
| Transportation and other public utilities | 8.9 |
| Trade | 21.6 |
| Finance, insurance and real estate | 4.5 |
| Service and misc. | 11.6 |
| Government | 14.7 |

## District of Columbia

The per capita income was above the regional average in both 1956 and 1939. In 1956, it was 2,371 dollars, and in 1939, 1,117 dollars, an increase of 112.2 per cent. The estimated population in millions was 0.8 in 1956 and 0.6 in 1939, an increase of 28.6 per cent.

The (a) number of households and (b) number of telephones, both expressed in millions, were as follows: 1956: (a) 0.2 and (b) 0.5, of which 47.6 per cent were business telephones; 1939: (a) 0.1 and (b) 0.2, of which 46.8 per cent were business telephones. The percentage increase for the period was (a) 40.8 and (b) 123.8.

Number of manufacturing establishments were 0.4 thousand in 1939 and

*(Please turn to page 50)*

# HOW THE WEBSTER ELECTRIC Teletalk can...

## extend communication convenience for your customers —and build up EXTRA revenue for you

New 1200 series Teletalk intercommunication equipment has been especially designed for telephone company use to help you provide inter-office and inter-building communication for your commercial and industrial customers — *utilizing standard telephone circuits*. This will in no way affect telephone conversations in the same or adjoining cables.

Teletalk is available from Graybar — nationally. Through a wide variety of models and circuit possibilities, you can fit Teletalk exactly to the needs of each individual customer. Wherever there is a need for amplified communication, a discussion of Teletalk convenience can lead to an immediate increase in your lease revenue. Call your nearby Graybar office for full details or write for Bulletin MI2AI-1. 810

**Above:** This 12-station master unit of the new Teletalk 1200 Series can be connected to provide secretive or non-secretive communication with other stations. Models are available from six to 48 station capacity. Below: Two-way conversation is provided over zero-level telephone lines with this Teletalk RM-B (AC) remote speaker station. Contains its own power supply, amplifier, attenuating pad and line-matching transformer.

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# YOU SEE THE DIAL...

## Type 82 Telephone...

With Automatic's new Type 82 Telephone, your subscriber can *dial in the dark.* The letters, numbers and finger holes on the dial are lighted. This telephone is an added convenience for which your subscribers will gladly pay extra.

**HOW IT WORKS!**

The Type 82 Telephone has two cords: the standard telephone connection cord and a cord for the dial light that plugs directly into a 110-Volt A.C. outlet. Once this cord is plugged in, the dial is lighted 24 hours a day. The electricity required costs the subscriber about five cents a year.

**MAKES TELEPHONING EASIER!**

With the Type 82 Telephone, your subscriber can make calls in darkness or twilight without groping for the right finger holes. And when the phone rings at night the light leads you right to it. In a test market, users told us that the Type 82 is a handy directional guide in a dark room.

**MINIMUM MAINTENANCE!**

The lighted dial on the Type 82 is electro-luminescent (not incandescent) so

# IN THE DARK!

## The Dial-Lighted Telephone!

there's no filament to burn out. Once installed, you can be sure that it will give your subscriber dependable service with little or no maintenance.

**SAFE AS A REGULAR PHONE!**

Because of limiting resistors, the Type 82 dial never draws more than five milliamperes of current—even if it should develop a short circuit! And it's listed by Underwriters' Laboratories, Inc.

**HAS ALL THE FAMOUS TYPE 80 FEATURES!**

The Type 82 Telephone has all the features of the famous Type 80—plus a lighted dial! And it's available in any of our ten attractive colors: Gardenia White, Camellia Pink, Forget-Me-Not Blue, Sunlight Yellow, Classic Ivory, Sand Beige, Garnet Red, Dawn Grey, Jade Green and Turquoise. Ask your Automatic representative about the Type 82 Dial-Lighted Telephone. He'll be glad to give you all the details. *Address: Automatic Electric Sales Corporation, Northlake, Illinois. Or call Fillmore 5-7111.*

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# Spirit of Service Lauded At California Meeting

By George A. Bridges*

SOUTHERN California extended a hearty welcome to nearly 1,200 representatives of the California Independent Telephone Association when they gathered for their 40th annual convention in Los Angeles on June 2, 3 and 4.

The convention was presided over by J. P. Maguire of Kern Mutual Telephone Co., association president, who at the first session on June 3 traced the association's activities during the past year.

Paying special homage to the men and women of the telephone industry, Mr. Maguire began by saying:

"My observations pertain to the people, the men and women employed in our great industry. We have an intangible something in our business that binds us together in a spirt of good fellowship, in a spirit of complete cooperation.

"This is something some industries never have. This is something we must preserve and never lose. Telephone people created and promoted our spirit; telephone people must preserve it.

"I am sure that this intangible force is a major cause of the fact that 30, 40 or even 50 years and more of service in the telephone business is a rule rather than an exception.

"Of course, there are other factors, but certainly one of them isn't great financial rewards. . . . I firmly believe it is that intangible something which we have that attracts and keeps fine people in our industry.

"I have called on many members of our association to serve on committees and to otherwise devote time to the conduct of the association's business.

"Willingness to serve was instantaneous regardless of the demand of their own business upon their time. Because this has been the case for many years, today we have a strong association . . . Our association plays an important part in our business; and as our members continue to expand both their investment, and the number of subscribers served, our association's role in our business will also expand."

Mr. Maguire reported that at the end of 1958, the association's member companies had a plant investment of over one-half billion dollars and served approximately 1,260,000 stations.

In spite of a period of recession in the early part of the year, member companies during 1958 increased their plant investment by 16 per cent and the number of telephones served by 7.5 per cent.

Frank A. Morris, director of telecommunications research for Stromberg-Carlson Co., injected wit and life into a highly technical talk, entitled "A Worm's Eye View of Electronic Switching."

*Mr. Bridges is press relations coordinator of the General Telephone Co. of California.

Newly elected officers of the California Independent Telephone Association are, left to right, Neal C. Hasbrook, secretary-treasurer; J. Curtis Newman of the Coachella Valley Telephone Co.; Allan R. Stacey of Sunland-Tujunga Telephone Co.; J. P. Maguire of Kern Mutual Telephone Co., retiring president; Donald H. Strahl of Gilroy Telephone Co., president; Harlan W. Holmwood of General Telephone Co. of California, first vice president; W. Gilman Snyder of the Western Telephone Co., second vice president; and Peter A. Nenzel of California Water & Telephone Co.

Mr. Morris provided an enlightening discussion of what the future holds for electronic switching and what it can provide telephone companies in the future.

He said that telephone companies "must examine themselves more carefully as to the service they are currently providing the public and determine, before it is too late, whether or not they are becoming obsolete, or if they are providing the ultimate in telephone service.

"Companies can prevent early obsolescence by increasing the convenience and pliability of their service. The transition from electro-mechanical systems to electronic switching may be an important agent in making this a future possibility. However, it may be many years before the commercial value of the flexibility provided by an electronic switching system is resolved."

"Presently," Mr. Morris continued, "I feel there are no techniques which permit the utilization of the electronic type of operation at sensible prices for the small or the average-sized Independent company. Therefore, even though it might be highly desirable to employ the use of such a system, today, it seems improbable that an Independent company could adopt it with economic safety."

Projecting his thoughts into the future, Mr. Morris concluded with the recommendation that telephone company management and employes closely follow the development of electronic switching equipment, so that if these systems do become more economical, companies will be able to cope with the transition.

The June 3 afternoon session featured two panel discussion groups dealing with commercial and plant problems. Chairman of the commercial panel was Paul R. Sercu, of General Telephone Co. of California. He was assisted by William F. Krabiel of the Pacific Telephone & Telegraph Co.; Lyal B. Martin of California Interstate Telephone Co.; Verne L. Rogosch of California Water & Telephone Co.; and Mrs. Virginia Williams of Evans Telephone Co. The panel discussed sales policies, sales training, collections and measurements.

Under the chairmanship of William G. Sebastian, president of Kerman Telephone Co., a panel of speakers discussed plant problems. Panel members were Donald H. Strahl of the Gilroy Telephone Co., F. Page Ellis of Roseville Telephone Co.; David K. Freer of Western California Telephone Co.; Robert Mallon of the San Joaquin Telephone Co.; Oscar Ivey of Enterprise Telephone Co., and John F. Wegforth of California Interstate Telephone Co.

**Participants in the California association's accounting panel are, left to right, John F. Donovan of the California Public Utilities Commission; Panel Chairman Fred C. Mehl of the Sunland-Tujunga Telephone Co.; Robert A. Lindsay of Western California Telephone Co., Frank J. Cristich of California Water & Telephone Co. and William W. Bentz of Central Western Co.**

Accounting and traffic problems were discussed by panels at the second day's session on June 4.

Members of the accounting panel included Fred C. Mehl of Sunland-Tujunga Telephone Co., chairman; William W. Bentz of Central Western Co.; Frank J. Cristich of California Water & Telephone Co.; John F. Donovan of the California Public Utilities Commission; and Robert A. Lindsay of Western California Telephone Co.

Spearheading the traffic panel, William Dales, of the California Interstate Telephone Co., presided as chairman and was aided by Howard Barlow of the General Telephone Co. of California; J. A. Bridges of The Pacific Telephone & Telegraph Co.; Mrs. Eunice Harris of Dos Palos Telephone Co., Inc., and Mrs. Bessie Reece of Coachella Valley Telephone Co.

Following the accounting and traffic panels, Clifford C. Pearce, vice president of the United States Independent Telephone Association and president of Farmers Telephone Company of Riceville, Ia., addressed the assemblage with a talk entitled "The Vanguard of Independent Telephony."

He stated: "Webster defines a vanguard as 'the troops who march in front of an army, hence, one that is in the forefront.' No words could so well describe the USITA.

"These are busy days for the USITA and the 14 men and women who now staff the Washington headquarters of our association and who wholeheartedly are dedicated to the task of protecting and furthering the interests of Independent telephony on the national front.

"Each member of the staff is a matured, experienced, full-time employe. Each is a specialist in his own particular field. Right now we have several irons in the fire and some of them are

**The Cocoanut Grove nightclub was the scene of a celebration for these California conventioneers. They are, left to right, Harlan W. Holmwood, executive vice president of the General Telephone Co. of California; Mrs. Holmwood; W. H. Gorman, director, southern district, California Public Utilities Commission; Mrs. C. Lyn Fox; L. E. Lattin, president of General Telephone Co. of California; Mrs. Gorman; General C. Lyn Fox, president of the California Public Utilities Commission; and Mrs. Lattin.**

pretty hot—excise tax repeal and toll compensation negotiations, for instance."

At the time Mr. Pearce spoke at the California convention congress had not yet taken any definite action on repealing the telephone excise tax. He stated that if nothing were done about it, it wouldn't have been because the USITA and its members hadn't tried. He stressed that all companies, Bell and Independent, must continue their efforts to obtain repeal.

He continued:

"Another iron we have in the fire right now, and one of the most important matters—dollar-wise at least—is toll compensation.

"Many Independent companies definitely are of the opinion that they are being inadequately compensated for their service on interchanged message toll business.

"Our companies recognize, of course, that Bell associated companies must have facts upon which to predicate authorization of increased payments. We have been hard at work for the past year in an effort to get those facts and we presented them to the Bell people at a recent high level meeting in New York.

"In this extremely important matter of message toll settlements, and in other matters of joint concern, we must not lose sight of the fact that the Bell and Independents together are engaged in a great common enterprise; that there must be harmonious relationships and good will existing between them; that there must continue to be mutual confidence and respect. We must continue to assume that a common solution can be reached by reasonable minds when they sit down together around the conference table. We now are at that conference table and we expect some concrete results to be reached shortly."

Mr. Pearce mentioned that another bill being watched closely is the community facilities bill. He termed it "another federal handout regarded by observers as downright socialistic."

As explained by Mr. Pearce, the purpose of the bill is to make loans to municipalities to build community and public facility works including utility facilities. This measure, he said, is not in the best interest of utility companies including telephone companies.

The highway reimbursement provisions of the Federal Highway Act of 1956 were another USITA legislative project taken up by Mr. Pearce. He told the audience that in the interest of safety it has been proposed that utilities be required to get off the highways entirely.

"These attacks," he said, "have had a hampering effect on efforts at the local level to obtain reimbursement." He mentioned that many states including California have already passed implementing legislation for reimbursement and that it was hoped that the 30 or more which have not yet done so, will do so in 1959.

**Traffic panelists as shown at the California convention are, left to right, J. A. Bridges of Pacific Telephone & Telegraph Co.; Mrs. Eunice Harris of Dos Palos Telephone Co., Inc.; William Dales (Chairman), of California Interstate Telephone Co.; Mrs. Bessie Reece of Coachella Valley Telephone Co., and Howard P. Barlow of General Telephone Co. of California.**

USITA's Advertising Committee and its current advertising program were the next topic taken up by Mr. Pearce. He explained that previously there had been two committees, one handling national advertising and another directing the Telephone Advertising Institute, which makes advertising material available to members for use at the local level.

Mr. Pearce noted: "This year the two committees were consolidated into one in the interest of efficiency and economy.

"The Telephone Advertising Institute was established 15 years ago and has been functioning well in the interests of our companies. The national advertising program was launched five years ago—May 10, 1954—and since that time our printed messages have been appearing with good effect at regular intervals in varying format in *Time, U. S. News and World Report, Farm Journal,* TELEPHONY, and *Telephone Engineer and Management.* This is a field of special interest to me and I am happy to inform you that the advertising program is paying off. . .

"We have definite proof that our national advertisements have been successful in identifying the Independent telephone industry in the public mind, in providing expansion capital for our companies, in promoting a better atmosphere for more adequate rates for service, in attracting capable personnel, in building good will and public confidence, and in promoting the American system of free enterprise."

Mr. Pearce also metioned that in addition to acting on the legislative front, the USITA continues to represent Independent companies in matters coming before the Federal Communications Commission and other governmental agencies in Washington.

He said, "We shall continue our efforts to see that our companies are not left out in the cold when it comes to the allocation of microwave and radio frequencies which are going to be so vital to our future operations."

One way each person attending the convention could help USITA achieve its objectives, Mr. Pearce said, is by bringing into membership those California companies which are not affiliated with USITA on a dues-paying basis.

He stated, "Every Independent company should belong not only to its state association, but to the national association as well. In fact their interests today and their problems practically demand it.

"The old saying that there is strength in unity is a bit trite but it is just as true today as it ever was. The more companies that affiliate with and participate in the activities of the California Independent Telephone Association and the United States Independent Telephone Association, the more effective will both associations be in representing the interest of the industry in the forefront of state and national affairs. With the financial and moral support of more companies, USITA will be in a stronger position to help the Independent telephone industry meet the challenges of the electronic age."

Final speaker, R. C. Payne, of the Aerojet-General Corp. closed the for-

*(Please turn to page 46)*

# Telephone Booths for Submarines ?

"UTTERLY fantastic . . . chasing rainbows," you'd say. The small group of men in Research and Advanced Development at Stromberg-Carlson, division of General Dynamics, would agree that undersea telephone booths are not here today, nor will they be tomorrow. They haven't yet found the final answer. But they know that an answer must be found: our lives may well depend on reliable communication between submarines, from submarine to surface ship, and from submarine to aircraft—without enemy detection and *while the submarine is completely submerged!* And fantastic as it sounds to us now, some variation of the familiar pay-station might be the most feasible solution.

Again you might say, "Let the Navy guard our shores; the Air Force patrol our skies; our job is to provide good telephone service in our local community."

Researchers at Stromberg-Carlson could show how past studies, stimulated by military necessity, have paved the way toward new products with commercial application. They could mention Carrier and Microwave as prime examples of end-products; during the course of the investigations an entirely new approach to the techniques of transmission was developed. And in this present study of underwater communication, discoveries are being made which will have definite bearing on the future of *all* communication.

### *Million-Gallon Test Tube*

For instance, in Stromberg-Carlson's huge tank designed for controlled experiments in anti-submarine warfare, the actual conditions of oceanography can be duplicated. Mountain peaks and valleys in the ocean floor create echoes—these must be studied to see how the seeming disadvantage can be turned to advantage. Layers of water of different temperatures and densities cause multiple deflections and reverberations. And of course the contact surface of air and water has a refracting effect on the transmitted signal. These are just a few of the problems.

In spite of difficulties compounded by the dearth of experience in this area, these men have succeeded in producing, for underwater use, single sideband carrier that is effective for many miles. Using both Voice and CW, the carrier equipment allows communication from submarine to submarine, from submarine to surface ship, and between members of an underwater demolition team.

### *Compressing the Bandwidth*

Each benchmark in new knowledge leads to further questions. One interesting study—now revived after being shelved 20 years ago because at that time it could not be "proved in"—is the Vocoder, a device which theoretically conserves carrier bandwidth by a factor of 10. The objective at the moment is only to see if the theory can be proved in the laboratory; if it can, a feasibility study would then be undertaken to determine if such a product could be economically justified in the telephone industry.

### *From D.D.D. to D.V.D.*

Even as investigation of the Vocoder continues, the researchers ask: "If we can compress bandwidth, superimposing 10 conversations on *each carrier channel*, can we go one step further and make speech itself (spoken words) activate electronic equipment in the central office to establish connections?"

Thus began a whole new series of studies in Voice Analysis directed toward automatic recognition of speech. A sizeable barrier, of course, is the colloquial accent of different sections of the country. However, these differences become less apparent in substituting numbers for letters; it is entirely conceivable that some day you could place a telephone call without touching a dial or push button. D.D.D. would then become D.V.D. (Direct Voice Dialing)!

### *New York or New Jersey?*

Direct Distance Dialing, as now understood, is of primary concern to the operating telephone manager; it is of equal concern to Stromberg-Carlson's Telecommunication Research Department—a little "closer to home."

A present problem, which will become greater until it is efficiently solved, is in verifying the exact match

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of all digits used to establish entrance to a particular class 5 (End) office. This becomes very important in establishing alternate routing quickly and economically. An example will point out the application:

Example: 201 MU2 is an exchange in New Jersey
212 MU2 is an exchange in New York City
218 MU2 *could be* an exchange in Minnesota
716 BA5 is one exchange in Rochester, N. Y.
716 BE5 is another exchange in Rochester, N. Y.

The equipment, therefore, must immediately recognize a perfect match in *all digits* between the anticipated end-office code and the information dialed, or the wrong connection will be made—perhaps to another state. Verification must be fast and reliable.

Telecommunication Research at Stromberg-Carlson has demonstrated a 7-Input AND gating system, using magnetic cores in a simple configuration, that answers this problem. The design is compact and, in comparison with present field practice using relays or switches, affords substantial economies.

Note that this device will handle *seven* digits. While at present the Area Code and Office Code total six digits (201 MU2), there is indication that this block of numbers is rapidly filling up, so that a 4th digit in the Area Code (201X MU2) will soon be required. The Stromberg-Carlson prototype gating system was therefore designed to handle these future requirements.

### *1, 2, 4, 8 equals 10*

Whether we use a rotary dial or a key punch, we are dependent on a 10-digit decimal numbering system for telephone directory numbers. Recognizing these numbers—verifying and storing them—can be frightfully inefficient. If, for example, a relay is assigned to each digit 0-9, then nine relays stand idle while only one is in use. In addition, each relay may get out of adjustment, with consequent failure and maintenance. A Binary Decimal Converter, based on 1, 2, 4, 8, allows one electronic common counting chain to recognize numbers and place them in a "memory" circuit. This development lends itself to DDD, combined with the 7-Input AND Gate, or can be used with the Core Sender to provide compatibility with relay systems. Rugged, with no moving parts and extremely low power requirements, this device, when available, will exhibit many advantages as a substitute for relays in its principal application: accessing the storage device. To make an oversimplified parallel, the Binary Decimal Converter acts like a cloverleaf entrance to a thruway.

### *Add Dollars by Division*

Seconds count! To the aerial gymnast, a split second is the distance from here to eternity, when one trapeze artist holds the other's life in his hands. To the telephone manager, each extra second of non-revenue connecting time in toll traffic is a severe drain on income. The Researchers are working on this.

A clever but simple device, called the Decimal Divider, converts seconds saved into dollars gained. In one of its functions, it first "looks" to see that 3 digits have been pulsed; then activates a logic circuit which determines whether these 3 digits represent an Area Code or an Office Code. Local calls thus by-pass the expensive toll equipment completely. The function, of course, is not new, but the simplicity, reliability and low cost of the device make this new approach attractive.

This same device, in a different application, can provide the means for economical computation of odd-cents toll rates, instead of the more customary 5-cent increments. Some companies that have had experience with odd-cent toll rates indicate additional income totaling thousands of dollars annually.

### *Libraries for "Permanent" Information*

In telephony there is a growing need to compare new problems with permanent information—source material. A satisfactory—but expensive—way to do this is with a magnetic drum. Stromberg-Carlson's Telecommunication Research Department is at work on a new approach which better fits the requirements *and the budget* of the Independent operating company. Based on the peculiar properties of nickel wire—which is not "biased" as to whether it remains a permanent magnet or not—a Delay Line device affording practicable "library" information of direct use in D.D.D. and D.S.A. facilities is well within sight.

### *No orders . . . yet!*

In the scurry of meeting today's immediate problems, most of us have to keep our eyes fixed on the trail no further than the next footstep. Sometimes we wonder where the trail will lead—but just keep plodding along.

The man in Research has a different job . . . always asking the questions, "What would we *like* to do? Can it be done? Is there a better way?" Many of their probes lead to blind alleys—they would be the first to admit it. Some, however, lead to products and procedures which seem fantastic today but will be standard tomorrow.

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# THE Operator's Corner

By MAYME WORKMAN — TRAFFIC EDITOR

THE MERCHANDISING News, published by the United States Independent Telephone Association, contained an interesting article recently on the subject of PBX operators, entitled, "PBX Girls Can Make Or Break A Business So Telephone Companies Help To Train Them."

The article stated: "A pollster on economic matters recently came up with this educated guess: Approximately 50 million dollars worth of business changes hands every year simply because important clients, calling from the outside, don't like the sound of the switchboard operator's voice.

" 'On the other hand,' according to *This Week* magazine, 'chairladies of the switchboard often do more than chairmen of the board to win customers and keep industry humming. Convinced that more customers come in through the telephone than ever walk in the front door, the Bell System has advisors all over the country to help switchboard operators brush up on their diction and telephone manners.'

" 'The heart of your business,' Cincinnati & Suburban Bell Telephone Co. tells its PBX subscribers, 'is your telephone operator. She is the very busy controller of the communications arteries of your business with never a dull moment in the day.

" 'Each day she greets hundreds of important customers in a gracious manner—just as a hostess would greet guests in her own home. She may soothe an irate caller in a subtle way by the efficient manner in which she handles his call.

" 'She is a part of every telephone business transaction carried on by your company, because she is that vital link between the customer and you. She goes about her duties in an efficient, cheerful way, seemingly with no effort at all. But, behind her smooth manner, lies tact, knowledge, skill and ofttimes the patience of Job. Get to know her job better; follow her telephone tips so that telephoning can be more profitable for you.' "

A PBX operator is not only important to her employer, she also plays an important role in the telephone industry as a whole. She places and receives many long distance calls, and if she handles these calls efficiently, according to standard operating methods, she expedites the completion of long distance calls, resulting in a saving of operator's time and toll circuit usage.

It behooves every telephone company, regardless of size, to maintain a friendly relationship with its PBX subscribers and PBX operators. They should also be ready and willing to furnish helpful assistance to these subscribers and operators at all times. The relationship between central office operators and PBX operators should always be on a friendly and cooperative basis.

If an operator is having difficulty with a PBX operator, she should inform her supervisor of this difficulty. It may be the PBX board is being operated by an inexperienced individual and, if so, the telephone company can be helpful in contacting the PBX subscriber and offering any training assistance which the difficulty indicates is needed.

This very morning, a friend of the writer's, who is a PBX operator for a large insurance company, called to ask advice in regard to a throat difficulty which affected her voice.

Her query was, "Shall I, or shall I not try to work today? I'm afraid toll operators may have difficulty in understanding me, and that would not be good for my company nor for the operators."

Knowing the person under discussion is most conscientious about staying away from her job and, since she was feeling well and had no cold which others in her office could catch, it was suggested she report for work. It was also recommended she request assignment to other work in her office and have the relief operator take her place at the switchboard until her throat difficulty cleared up. Naturally, she is under treatment for the condition. She decided to follow the writer's suggestion.

Many PBX operators are former telephone operators and, if they were properly trained in the central office, they usually make very efficient PBX operators. However, it must be recognized that operating practices are revised from time-to-time, and new practices are made effective. Therefore, the PBX operator, as well as the central office operator, requires training and instruction in order to keep up-to-date in operating methods.

An invitation to PBX operators to visit the central office is usually accepted and appreciated. These visits are beneficial to the PBX operators and to the central office operators as well. They improve relations between operators resulting in better service to all concerned.

Have your PBX operators visited your office lately? Perhaps you would like to suggest to your manager that they be invited to do so.

## Traffic Questions

(1) In reaching a called party, where an alternate telephone has been specified when the call was placed, if the called party will be available in three minutes, should the operator wait for him?

(2) On a call on which an alternate telephone is specified when the call was placed, if the called party will not be available in three minutes, how should the operator proceed?

(3) On a person call, if the called person is unwilling or refuses to talk, what should the operator say?

(4) How should the operator proceed if the called party is not expected at any future time?

(5) If the called party will talk from a telephone other than an extension of the same PBX, how should the operator proceed?

*Answers are presented on page 54.*

# Courts and Commissions

## Minn. Independent Granted Rate Raise for EAS

The Scandia-Marine Telephone Co., Scandia, on July 13 was authorized by the Minnesota Railroad & Warehouse Commission to raise its rates at its Marine exchange to provide for extended area service.

A survey made of Marine subscribers indicated that 72 per cent wanted EAS to Northwestern Bell Telephone Co.'s Stillwater exchange.

Marine serves 224 stations and extended area service between it and Stillwater's 5,000 stations would form a group of about 5,244 stations connectable without toll charge.

Net operating revenues under the old rates were $47,330 giving the company a net income of $12,929 and a 4.38 per cent return on its rate base of $294,896.

The new rates will provide the company net operating revenues of $48,347, giving it a net income of $13,906 and a 4.70 per cent rate of return.

Present rates, and approved rates to be effective with EAS, are as follows:

| | *Present* | *Approved* |
|---|---|---|
| One-party business | $7.75 | $8.45 |
| Two-party business | 6.75 | 7.45 |
| Multi-party rural business | 5.15 | 5.85 |
| One-party residence | 5.50 | 6.20 |
| Two-party residence | 4.75 | 5.45 |
| Four-party residence | 4.05 | 4.75 |
| Multi-party rural residence | 4.15 | 4.85 |

## SBT&T To Ask High Court To Reconsider Miss. Refund

Southern Bell Telephone & Telegraph Co. has announced, according to a July 13 report, that it would ask the Mississippi Supreme Court to reconsider its decision rejecting a 2.5-million-dollar rate increase (TELEPHONY, July 18).

C. L. Lott, Mississippi vice president and general manager, said the court ruling meant that rates authorized by the Mississippi Public Service Commission to provide earnings of less than 5 per cent are "just and reasonable."

The court had upheld the commission, which found in 1956, that the rates were adequate for a fair return on Southern Bell's Mississippi investment.

The decision would require Southern Bell to refund nearly 9 million dollars to subscribers. This amount represents the collection of the increase under bond for three years, plus 6 per cent interest.

## Set Hearing on Sale Request and EAS in Wis.

The Wisconsin Public Service Commission on July 22 was to have heard the application of the Lynn Telephone Co. for authority to sell its property to the Badger State Telephone & Telegraph Co., Neillsville.

It was also to hear Badger State's petition to convert the Lynn company to automatic operation; establish an ex-


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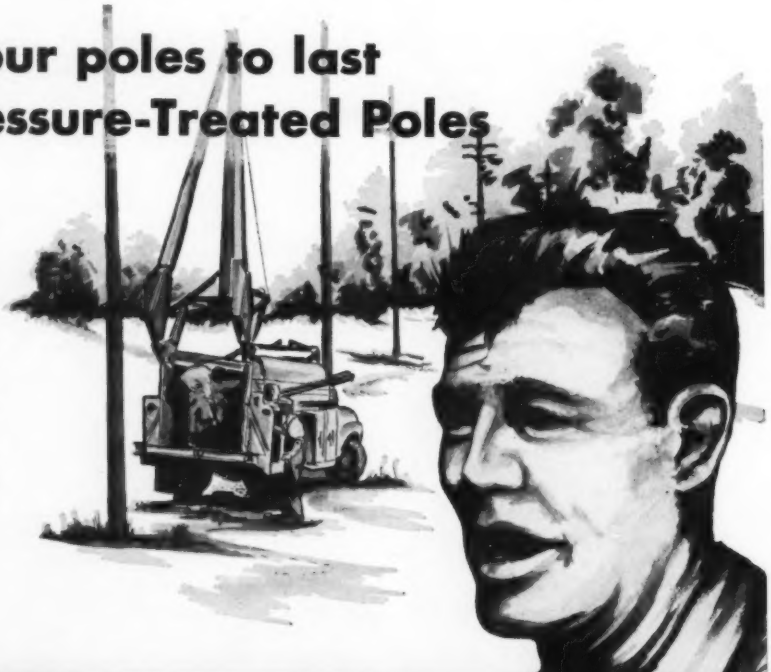

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change at Chili; transfer Lynn subscribers to the Chili and Granton exchanges; establish EAS between Chili and Granton, and between Chili and Neillsville; and to rehabilitate the Lynn company's facilities.

## Oregon Independent Gains Rate Relief

The Depoe Bay Telephone Co. on July 15 secured authorization from the Oregon Public Utility Commissioner to increase total operating revenue by $5,740.38, and thus be in lien for a 3.27 per cent rate of return.

With an REA loan of $136,000, the company's capital is 93.6 per cent in REA mortgage notes and 6.4 per cent in common stock and surplus. Commenting on the rate of return allowed, the commissioner said: "Due to the high percentage of debt in applicant's (the company's) capital which bears interest at 2 per cent per annum, the rate of return of 3.27 per cent is fair and reasonable."

New rates applying to the Depoe Bay company's 326 stations are expected to result in net operating income of $4,187.38. The commissioner approved an average net plant and working capital rate base of $128,234.41 for the 12-month test period ending Dec. 31, 1958.

Revenue for the test period was found to be $20,828.17, which with revenue deductions of $20,896.47, gave the company a net loss of $68.30.

## Ask Purchase, Note OK; Allow Financing, Raise, Sale in Ind.

The Indiana Public Service Commission recently received the following petitions:

The Laurel Rural Telephone Co., Inc., through its receiver B. F. Russell, asked to sell to the General Telephone Co. of Indiana, Inc.

Midwest Telephone Co., Petersburg, asked permission to issue $50,000 in notes.

•

The commission took the following actions:

General Telephone Co. of Indiana was authorized to issue 5 million dollars in first mortgage bonds and 100,000 shares of common stock of no par value.

The Richmond Home Telephone Co. was allowed to withdraw its rate raise petition (TELEPHONY, Nov. 15, 1958).

Sullivan Telephone Co., Inc. was authorized to reduce the value of its common stock from $100 to $50 per share, and upon amendment of its articles of incorporation, to issue to present stock-


# ENGINEERS

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holders, for each share of their $100 par value stock, two shares of common stock with a value of $50 each.

The Farmers Mutual Telephone Co. of East Enterprise, Inc. was allowed to charge $2.00 monthly to each subscriber.

Home Telephone Co., Inc., Waldron was granted permission to borrow $210,000 from Stromberg-Carlson and to issue and sell 250 shares of its 5 per cent preferred stock at $100 per share. The company was also authorized to replace existing "free service" with extended area service, and charge the following rates on conversion to automatic operation:

| | |
|---|---|
| One-party business | $10.00 |
| Two-party business | 7.00 |
| Multi-party rural business | 5.50 |
| One-party residence | 5.50 |
| Two-party residence | 5.00 |
| Multi-party rural residence | 4.25 |
| Four-party residence | 4.25 |
| Multi-party town residence | 3.00 |

The Thomas Telephone Exchanges, Inc., Roachdale, were authorized to purchase the Amo exchange from the Amo Mutual Non-Profit Telephone Association.

## Allow Issue of Notes, Stocks; Add Area in Kan.

The Kansas Corporation Commission, it was reported on July 4, gave the Kansas State Telephone Co., Baxter Springs, permission to issue mortgage notes to secure an REA loan of $1,329,000 granted several months ago; to issue common stock amounting to $200,000; and to add several new areas for service.

Kansas State's request to extend its service area was opposed by a Columbus, Kan., telephone company. The commission stipulated that subscribers who wish to continue with the Columbus company's service may do so, while others may be included in the Baxter Springs company's service.

William Hollis, general manager of Kansas State, expects that the system will be cut over to automatic service by October, 1960.

## Ask Stock OK in Nebraska

The Nebraska Railway Commission has set an Aug. 28 hearing date on the application of the Lincoln Telephone & Telegraph Co. to issue and sell 30,000 shares of preferred stock at a par value of $100. Proceeds would be used to retire temporary bank loans. The stock would be offered to holders of the company's common stock on a pro rata basis and would be convertible into shares of common stock on a basis to be determined later.

## Approve Rate Increase For Georgia Independent

The Georgia Public Service Commission on June 24 approved a rate adjustment of $4,929 for the Wilkinson County Telephone Co., Inc., Irwinton.

The company showed total operating revenues for the year ended Jan. 31, 1959 of $59,602; and net operating revenue of $8,502. The increase granted by the commission will allow a net operating revenue figure of $8,696.

The rates granted will provide a rate of return of some 5.1 per cent on the company's investment.

The schedule of old and new rates is as follows:

| | Old | New |
|---|---|---|
| *Irwinton-McIntyre exchange:* | | |
| One-party business | $6.00 | $6.50 |
| Two-party business | 5.00 | 5.50 |
| Four-party business | 4.00 | 4.50 |
| Multi-party business | 3.75 | 4.25 |
| One-party residence | 3.75 | 4.25 |
| Two-party residence | 3.25 | 3.75 |
| Four-party residence | 2.75 | 3.25 |
| Multi-party residence | 2.75 | 3.25 |
| *Toomsboro exchange:* | | |
| One-party business | $6.00 | $6.25 |
| Two-party business | 5.00 | 5.25 |
| Four-party business | 4.00 | 4.25 |
| Multi-party business | 3.75 | 4.00 |
| One-party residence | 3.75 | 4.00 |
| Two-party residence | 3.25 | 3.50 |
| Four-party residence | 2.75 | 3.00 |
| Multi-party residence | 2.75 | 3.00 |
| *Gordon exchange:* | | |
| One-party business | $5.00 | $6.25 |
| Two-party business | 4.00 | 5.25 |
| Four-party business | 3.00 | 4.25 |
| Multi-party business | 3.50 | 4.00 |
| One-party residence | 3.50 | 4.00 |
| Two-party residence | 3.00 | 3.50 |
| Four-party residence | 2.50 | 3.00 |
| Multi-party residence | 2.50 | 3.00 |

## Requests EAS Authority, Increased Rates in N. C.

The Central Telephone Co., Hickory, on July 9 asked the North Carolina Utilities Commission for authority to establish extended area service between Asheboro and Ramseur.

The company also requested authority to charge $10.55 for one-party business service and $5.70 for one-party residence service under the proposed EAS arrangement.

It is expected that it will take about a year after approval to put new equipment into operation.

## OK Rate Raise in Wisconsin

The Mt. Vernon Telephone Co. on July 2 received approval from the Wisconsin Public Service Commission to raise its rates $29,540 per year (TELEPHONY, Apr. 25). The company was also allowed to discontinue ex-

tended area service between its Verona and New Glarus exchanges and to provide EAS between Verona and the Wisconsin Telephone Co.'s Madison exchange and the Farmers Union Telephone Co.'s Middleton exchange.

## Increase for Two W. Va. Exchanges of Independent

The West Virginia Public Service Commission, it was reported on June 26, granted a rate increase to the United Utilities of West Virginia, Inc., which operates the Bruceton Mills and Flemington exchanges. The increase is designed to bring in $143,555 annually.

The new rates at Bruceton Mills and Flemington says the commission, will not become effective until the company cuts over the two exchanges to automatic service, which, it is expected, will serve 1,748 subscribers.

## Authorize Purchase in Mo.

The Missouri Public Service Commission gave the Meramec Telephone Co. authority on July 2 to purchase the Bland Telephone Co. (TELEPHONY, May 9) and to borrow $115,000 to finance a modernization of the Bland exchange.

## Grant One Increase; OK A Paystation Raise in Neb.

The Nebraska Railway Commission, it was reported on July 3, granted authority to the Public Telephone Co., Blair, to raise its rates, except on company grounded lines, effective Aug. 1, at its Arnold, Callaway, Oconto, Stapleton, Ewing and Page exchanges (TELEPHONY, July 11).

In another action, the commission gave the Ponca Telephone Co., Blair, authority to make miscellaneous rate revisions, including increasing the cost of paystation calls from five cents to 10 cents.

## Authorize Hawaiian Company To Issue Stocks, Bonds

The Hawaiian Telephone Co., Ltd., has received approval from the Hawaii Public Utilities Commission to issue common stock and mortgage bonds totaling 10 million dollars.

The financing will raise about two-thirds of the 15 million dollars needed by the company for plant and service expansion during 1959 and 1960, President J. Ballard Atherton said.

The company will offer its stockholders 209,000 common shares on the basis of one new share for each seven held. It is estimated the stock issue will yield between 5 and 5.5 million dollars.

The mortgage bonds will raise another 4.5 million dollars and will be offered after the common stock is issued.

## General of Indiana Buys Independent, One Exchange

The operation of the Clay City exchange of the Citizens Telephone Co. of Clay County, Inc., Brazil, and the Harrison Township Telephone Co., Clay City, has been assumed by the General Telephone Co. of Indiana, which recently made the two purchases (TELEPHONY, Apr. 4).

Effective Sept. 1, the offices of the two telephone companies formerly serving in Clay City will be combined.

## Grant Kan. Rate Increase; Set Permanent Dial Rates

The Kansas Corporation Commission on July 8 granted a rate increase of $1,377 to the Longford Telephone Co., which has 189 subscribers.

In additional action, it declared the


**NOW you can test working cable pairs without causing subscriber reports with the MURPHY Silent Buzzer!**

**You needed it!**
**Murphy made it . . .**
**the**
**Murphy Silent Buzzer**

for testing cable pairs without causing subscriber reports. It's ready now at a low cost that will amaze you . . . especially when you check these advantages:

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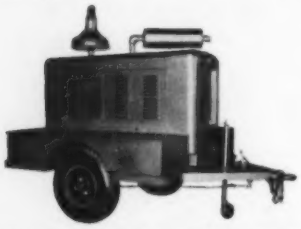

Units provide both single phase power for lights and 3-phase power for other needs. Many exchanges in an area can be served by a single unit.

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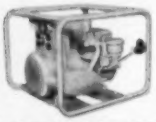

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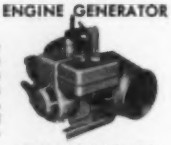

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interim dial rates in effect for the Pioneer Telephone Association, Inc., of Ulysses, to be permanent.

## Pass New Property Tax Assessment Law in Cal.

A California bill requiring publication of heretofore secret ratios used by counties between assessed value and market value of common property was passed recently.

Opponents of the measure contend that publication of these county assessment ratios will mean a shift of taxes from utilities to common property. Proponents of the act state that it will not.

The law also repeals a never-invoked 1949 law requiring equal assessment of utility and other property.

Assemblyman Glenn Coolidge of Felton maintains that if the 1949 law had been permitted to take effect it would have resulted in a 95-million-dollar tax shift to common property owners.

A committee, headed by Coolidge, found during a two-year study, that the state assessed utility property at 50 per cent of historical value while the counties assessed common property at 25 per cent of market value. This disparity has been the basis of several lawsuits filed by railroads for recovery of taxes. Utility companies have claimed that the state constitution requires equal assessment.

Soon after the governor signed the bill, several railroads were reported to be dropping their suits asking for refunds of property tax.

The suits, filed by Southern Pacific, Santa Fe, Western Pacific, and Union Pacific, had asked for return of 52.6 per cent of their 1958-59 property taxes, on the ground that railroads were taxed twice as high as other property owners.

## OK Sale in Michigan

The Michigan Public Service Commission has approved the sale of the Gaines Telephone Co. to the General Telephone Co. of Michigan.

## Hear Rate Request in Ill.

The Illinois Commerce Commission set a hearing for July 23 on the rate increase asked by the Millstadt Telephone Co., for its Westview and Millstadt exchanges.

# SERVICE LAUDED AT CALIFORNIA MEETING

*Concluded from page 38*

mal part of the 1959 convention with an address entitled "Educating for the Rocket Age," in which he called attention to the bewildering changes that have taken place since the 19th century, the kind of person needed to cope with these changes, and how the young must be trained and developed.

Among the changes, he cited the contrast between the 19th century individualist and the modern "mass man" or suburbanite; the rise to power of the communist nations; and the vast technological advances in the past 40 years. He said that all types of people —managers, technicians, problem solvers—were needed in the complex modern world. Mr. Payne indicated that in Russia, where tremendous advances have undeniably been made, teachers are paid more than doctors, and he expressed a hope for making the role of the teacher "one of the most-looked-up-to in our society."

According to Payne, we will have to demand the utmost from our education system and be willing to pay for it, if the challenge of tomorrow is to be met with vigor.

The convention elected the following directors: Harlan W. Holmwood of General Telephone Co. of California, J. P. Maguire of Kern Mutual Telephone Co., Peter A. Nenzel of California Water & Telephone Co., J. Curtis Newman of Coachella Valley Telephone Co., W. Gilman Snyder of the Western Telephone Co., Allan R. Stacey of Sunland-Tujunga Telephone Co., and Donald H. Strahl of Gilroy Telephone Co.

Officers elected by the directors are: President, Mr. Strahl; first vice president, Mr. Holmwood; second vice president, Mr. Snyder, and secretary-treasurer, Neal C. Hasbrook.

## Obituaries

HOWARD C. SMITH, 62, chief switchman of The Lincoln (Neb.) Telephone & Telegraph Co., died of a heart attack while at work on July 17.

Mr. Smith was born at Harvard, Neb., and started work with the company there as a lineman on Apr. 30, 1917. Later he was wire chief at Adams and manager at Talmage, Dunbar and Ceresco.

In 1928 he became a combinationman at Wahoo and shortly after moved to Lincoln in this capacity.

He became a switchboardman at Lincoln in 1942, equipment foreman in 1947 and assistant chief switchman in 1949 before his appointment as chief switchman on Nov. 16, 1949.

He is survived by his wife, Viola;

four sons, Donald D., Elyrn D., Charles G., and Kenneth R.; and one daughter, Mrs. Norma Holmes, all of Lincoln; and by a sister, Mrs. Leo Frank of Harvard and 11 grandchildren.

His sons Donald D. and Elyrn D. Smith are employed by the Lincoln company.

Mr. Smith was a charter member of the Frank H. Woods chapter of the Independent Telephone Pioneer Association.

•

CLAYTON LECHNER, secretary-treasurer of the Crystal (Mich.) Telephone Co., died recently following a six-week illness. Mr. Lechner's wife and children survive him.

## Communications Studied by Teachers During Session

Science and its effect upon communications were explored recently by 51 high school science and mathematics teachers attending a Summer Science Institute at the University of South Dakota, Vermillion.

R. A. Franzen, plant staff supervisor of the Northwestern Bell Telephone Co., Sioux Falls, led off the week-long communications study with a talk on "Recent Advances in Communication."

Following the lecture-demonstration, the teachers toured the Vermillion exchange.

The institute is co-sponsored by the National Science Foundation for the purpose of acquainting high school teachers with new developments in science and new teaching methods. Communications was one of the topics taken up during this eight-week institute.

## Danes Plan Dial Service

The Copenhagen (Denmark) Telephone Co., Ltd., a state-owned utility, is planning to convert its system to automatic operation. To finance the conversion, it has negotiated a Swiss loan of approximately 3.4 million dollars.

## Red Cross Volunteers

There are many ways in which people of the telephone industry, as well as those in other industries and business, can give helpful volunteer service. The Red Cross needs volunteers in such areas as these:

(1) Knitting and sewing for disaster victims.
(2) Making surgical dressings for veterans' hospitals.
(3) Typing and general office duties.
(4) Driving blind children to their swimming lessons.
(5) Working in the Red Cross youth program.


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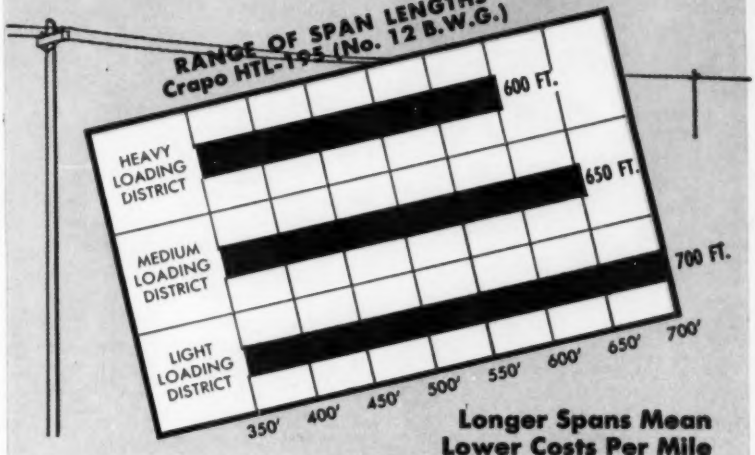


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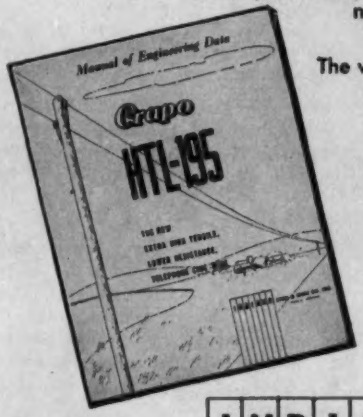
The voice transmission quality of Crapo HTL-195 is equal to that of Crapo HTL-135 and superior to older grades of ferrous wire.

Pertinent technical data have been prepared to assist engineers in designing and building extra long span lines with Crapo HTL-195.

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# How To Get Your Staff To Do Their Best

**By William J. Milford**

"EVERYBODY LIKES that fellow. Men do a better job for him than for anyone else. He's just a born leader!"

The individual who made this statement was completely wrong. The telephone company executive of whom he spoke worked long and hard at making his staff feel that way about him. Without a doubt, he is still working just as hard at it and will have to continue doing so.

No man is given the gift of leadership at birth. It comes from long and patient study, continued careful procedure, and a deliberate effort to secure favorable response from his fellow men.

What secrets has the above-mentioned executive discovered? None whatsoever.

Here is a summary of the thinking and acting processes needed and the steps you should take toward securing satisfactory performances from the men and women on your staff:

*Balance out the effort required.* Don't load assignments on some individuals and not on others. This discourages those who have ability (no one likes to be the workhorse in any group) and leaves others with little to do.

No group of people can accomplish much unless every member has something to do on every assignment.

*Be sure the "tools" are available.* When you hand out assignments or tasks to personnel, their full cooperation is certain to be lacking if you fail to supply the necessary "tools" for their use.

These may be such things as proper equipment, technical information on how to proceed, specific information we may have, etc. Every physical aid available should be sought out and handed the men and women you direct as an assist in getting the assigned job done better.

*Define the duties.* Both the overall aim and the specific chores to be accomplished by every individual on the staff should be stressed. People like to know what is expected of them from the man heading their group. That applies to the individual as well as the group. Too often an executive may set a goal for the staff and completely neglect to break it down into individual duties.

*Play up to self interest.* The men who get others to do things for them learned this as a cardinal principle or they never would have attained successful leadership. Just as you have your own self interest in getting the task accomplished, so does each individual have a specific self interest. This may differ from one person to the other within the group.

If you take the time to ferret out each person's self interest you can chart your course of action to appeal to that feature.

*Avoid "conflict" within the staff.* "Conflict" should not be mistaken for competition. The latter is a valuable factor which can be put to good use. The former can be injurious when the leader's planning runs up against that in other directions from within the staff. There also is a conflict of interest on the part of each individual. The phase of the job or assignment bearing the most importance to each and every individual on the staff may vary. Everyone may think his particular task is the most important and deserves precedence.

*Set your demands at a reasonable level.* Do you yourself attempt to attain goals which are the most distant and difficult? Few of us do; we prefer to channel our efforts toward more attainable things. This applies to everyone in this world of ours. When unreasonable demands are presented to any group, the degree of effort put forth by the members will always be small. When requests to the group are kept at sensible and reasonable levels (in their eyes) you can have much greater assurance of results.

*Approach each member of the group individually* (if at all possible to do so). The individual and personal appeal places that person at a much higher level than if spoken to only as a member of the group.

"J. B. asked me personally to put

forth extra effort on this," is something all of us have overheard at one time or another. The words were spoken with pride in every case. That man or woman had been given something extra as an incentive.

*Make the rewards explicit.* When you ask your staff people to do something extra and offer no reward to the group or to the separate individuals, you reduce incentive, and that, in turn, always means lowered personal effort. There are group and personal rewards in every effort, whether these are material or those of personal satisfaction. You should never assume that such rewards are understood by the staff personnel themselves. Make a little extra effort to outline these clearly so that everyone understands them.

*Establish responsibility.* Too often the executive assumes responsibility is entirely his own. This is a serious error.

The successful completion of the job or assignment calls for responsibility all the way up and down the line. Make certain the staff understands this. Explain each individual's responsibility.

*Make sure your advantage does not exceed theirs.* "Why should I knock myself out on this—it may mean a bonus to him but nothing to me for sure!" Whenever the action called for has definite advantage to the leader's own welfare, it pays to play that factor down as much as possible and to place every bit of emphasis on the big advantages to the individual instead.

*Pair "likes" together in group assignments.* Many group efforts fail miserably because the man in charge planned them poorly. Good planning calls for making certain, when the assignment is sub-divided, that individuals congenial to one another are paired together. The man who distinctly dislikes the talk or mannerisms of another individual isn't going to be very successful working with him on a task or assignment.

*Recognize differences from man to man.* Plan with the understanding that no two fellow humans are made just alike or have equal abilities. Plan the program with this in mind.

*Forget about "volunteers."* Never build a group effort or program on the assumption that you will receive voluntary effort from the participants. There probably will be a little of it, but the amount will be so small that a program is doomed to failure if you depend on it for success.

*The goal must be workable.* Personnel have no heart toward extra effort when the end goal seems impossible or impractical to them. While this seldom applies in routine matters, it is often a point to be considered on any-


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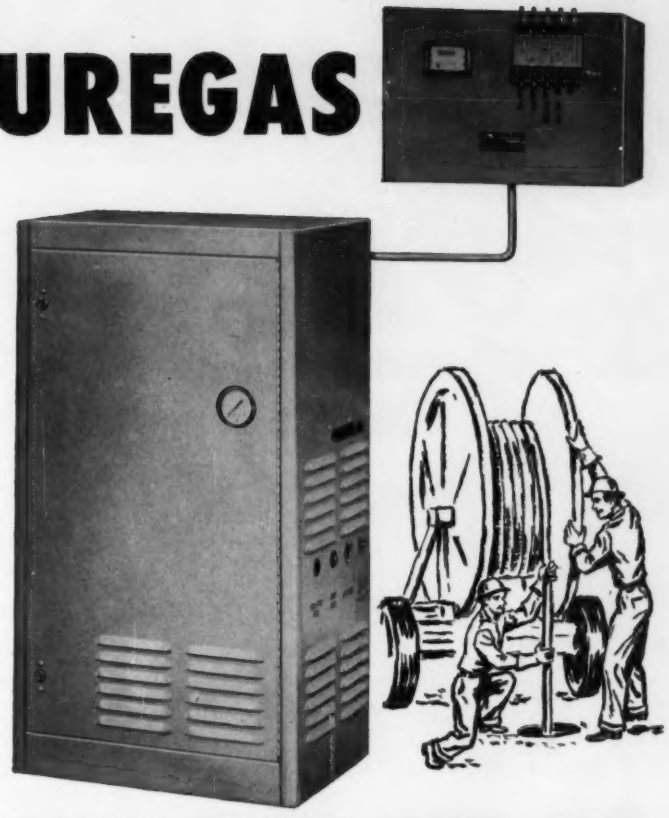

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Under ground—Above ground, pressurized dry air keeps moisture out of cables and keeps conductors dry. PUREGAS equipment automatically maintains dry air pressure all along the line.

Constant air pressure stops water and corrosive fumes from penetrating cable sheath breaks, as PUREGAS equipment automatically responds by increasing air flow in the affected cable. In addition to this advantage, dry air prevents condensation from forming inside the cable regardless of outside air temperature.

PUREGAS equipment quickly recovers its investment by adding to cable life, and reducing maintenance costs while protecting circuit continuity. This is why more and more cable networks throughout the country are being pressurized with PUREGAS dry air equipment.

*To increase subscriber satisfaction and cut operating costs, investigate PUREGAS pressurized dry air. Send for new technical information on "Why cables should be pressurized."*

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thing new which may be on the schedule.

*Keep "time and convenience" in mind.* The time the individual has to perform his part of the assignment as well as his regular routine duties must always be considered.

*Instill competition within the group.* Whenever this can be done, it always produces more results. Competition gives an individual (as a member of the team) an extra incentive to put forth added effort.

*Establish progress reports.* They help to keep interest alive and to add a continuing spur to efforts. They are a "must" when internal competition, such as mentioned above, has been set as part of the project.

*After an initial pressure drive, beware.* This is where the letdown can come that will cause the program to fail within sight of its goal. Remember also that routine work may possibly suffer afterwards unless a method to return to smooth performance of regular routines has been devised.

### Value of Adversity

"Adversity, if for no other reason, is of benefit, since it is sure to bring a season of sober reflection. Men see clearer at such a time."—BEECHER.

## IMPACT OF TELEPHONE

*Continued from page 32*

1900. Total employment in thousands was 1956, 22.0; 1939, 14.3; 1900, 7.1.

The pattern of (a) payrolls in millions of dollars compared with (b) value added by manufacturing in millions of dollars, was as follows: 1956: (a) 107.0 and (b) 180.0; 1939: (a) 24.9 and (b) 43.3; 1900: (a) 3.8 and (b) 8.9.

In 1958, there were 600.1 thousand telephones, of which there were 283.7 thousand for business and 316.4 for residence use.

The personal income in 1957 was 2,089 million dollars.

The distribution of employment is shown below:

| *Type of Employment* | *Percentage Distribution* |
|---|---|
| Total employment | 100.0 |
| Mining | * |
| Contract construction | 3.3 |
| Manufacturing | 3.2 |
| Transportation and other public utilities | 5.7 |
| Trade | 17.9 |
| Finance, insurance and real estate | 4.8 |
| Service and misc. | 14.2 |
| Government | 50.9 |

* None.

*(To Be Continued)*

### Baghdad Pact Nations OK 3,000-Mile Microwave Link

The governments of Iran, Pakistan and Turkey are reported to have approved final proposals for a 3,000-mile microwave telecommunications network linking the Baghdad Pact capitals, Ankara, Teheran and Karachi.

It is expected the new 600-channel system will cost about 20 million dollars. The united States is a substantial contributor to the project which is scheduled for completion in 1961.

First phase of construction work involves building roads to the 117 relay

*(Please turn to page 53)*

SAVE ONE BATTERY EVERY 4 HOURS

with the JUSTRITE LIGHT-STICK

*and have 167% more beam candle power at the same time plus longer bulb life*

The efficiency of LIGHT-STICK's 6-volt circuit does it. Four standard batteries working together give 150% more burning time than the standard 2-cell light.

With rust-proofed 24-gauge steel case, unbreakable lucite lens, protective rubber collar and heavy 2-conductor cord. LIGHT-STICK lasts years longer.

LIGHT-STICK with swivel head meets every lighting problem...stands up firmly or lays flat on side *without rolling*. It has a belt clip, carrying ring and hanging slot. Though it costs a little more, LIGHT-STICK pays for itself in savings, service and satisfaction.

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### Sleep and Concern

**". . . Many potentially good men have failed for lack of sleep, that is, for lack of concern for their physical and psychological well-being, without which one may lack the alertness to ask the right question, the sharpness to see the answer, the determination to act, or the staying power that may be required." — DAVID H. NEWHALL, on "What Is Virtue?"**

When the Elyria, Ohio, Telephone Co. expanded its underground system to continue its program of long-distance direct dialing, Anaconda Stalpeth did the job. And did it quicker, more easily and at less cost than ordinary paper-lead cable.

## **ANACONDA STALPETH** THE LIGHT-WEIGHT PAPER-INSULATED TELEPHONE CABLE THAT'S A "HEAVYWEIGHT" IN SAVINGS AND PERFORMANCE!

Lower initial costs . . . lower shipping costs . . . lower installation costs . . . lower maintenance costs—you get them all with Anaconda Stalpeth, the paper-insulated telephone cable that's 30% to 50% lighter than ordinary paper-lead cable!

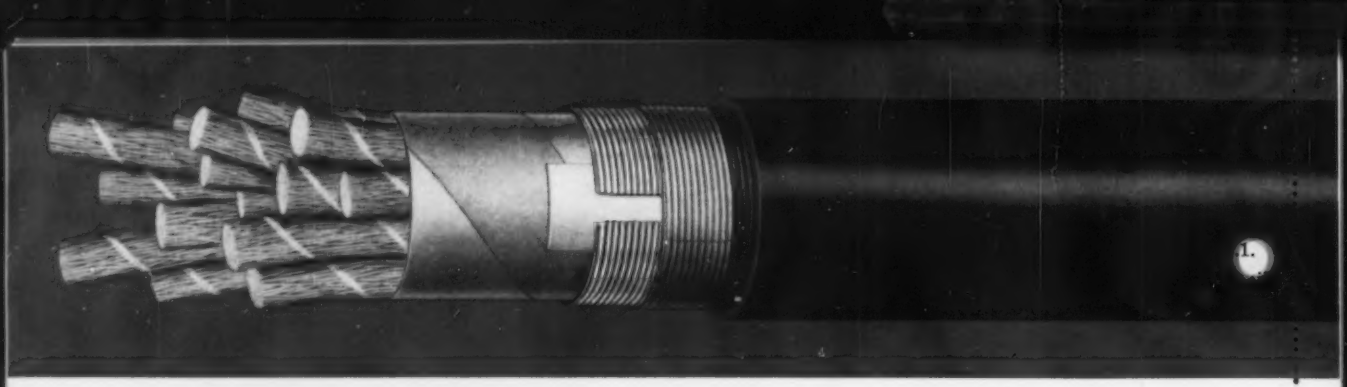
Anaconda Stalpeth comes by its money-saving light weight because its sheath is made of STeal, ALuminum and PolyETHylene. The result is a cable that offers new economy, new ease of handling. It permits longer pulls through ducts and quicker aerial installation.

Once installed, Anaconda Stalpeth turns in steady, dependable performance—thanks to the outstanding electrical and mechanical properties built into it at the factory. Anaconda's rigorous quality-control setup is a double-check: each conductor is individually inspected as it comes out of the insulating machine, and every pair is tested. Thorough in-process control eliminates need for costly, time-consuming field inspection.

In addition there are other important advantages: (1) Anaconda Stalpeth's polyethylene jacket offers electrical protection from falling power lines. Prevents power faults which could damage lead-sheathed cable. (2) Its high-molecular-weight polyethylene jacket prevents corrosion problems often encountered in ducts. (3) The electrical characteristics of Anaconda Stalpeth have been engineered to the high standards of all Anaconda cable: minimum conductor resistance . . . high insulation resistance . . . maximum dielectric strength . . . low-resistance shield—traditional paper quality with new economic light-weight sheath.

Consider this modern, light-weight, economical cable for your telephone needs. Behind its manufacture stands Anaconda's 50 years of experience in the production of paper-insulated cables, the latest in manufacturing equipment and testing devices. Distribution points across the country mean fast delivery and service. Anaconda Wire & Cable Co., 25 Broadway, New York 4, New York.

*For further facts on Anaconda Stalpeth see other side . . .*



**STALPETH CONSTRUCTION.** *Insulation:* Single-wrap paper tape applied with an overlap. *Color Coding and Assembly:* Coded by standard color groups in all constructions. Layer construction 51, 76 and 101 pairs; unit construction 76, 101, 152, 202, 303, 404, 606, 909, 1212, 1515, 1818 and 2121 pairs. For 19 Awg and 22 Awg—insulated conductors are twisted into pairs having 10 different pair twists; for 24 Awg and 26 Awg—they are twisted into pairs having 5 different pair twists. The pairs are stranded into units. The units are assembled as shown. Cable core is covered by two thicknesses of paper tape. *Sheath:* Anaconda Stalpeth sheath is composed of aluminum tape, coated-steel tape and a high-molecular-weight polyethylene jacket overall. The inner .008-inch aluminum tape is applied longitudinally with a slight gap, corrugated for flexibility in large diameter cables. The low d-c resistance of this tape when properly grounded limits the effect of induction from power lines and reduces possibility of damage to cable from lightning. The outer .0072-inch corrugated coated-steel tape is also applied longitudinally, but with an overlap, and is soldered to form a tight metallic seal. It provides maximum protection to the cable core against possible moisture diffusion through the outer polyethylene jacket. The outer jacket is composed of high-molecular-weight polyethylene which is highly resistant to abrasion, weathering, moisture, corrosion, and environmental cracking. *Shipment:* Each length is wound on a separate reel, with each end sealed to prevent entrance of moisture. Each reel is fully lagged.

5/1847

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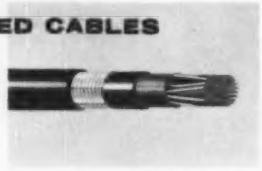
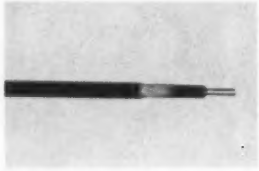


**Anaconda Type PCP Direct-Burial Cable (No. 19, 22 & 24 Awg).** Polyethylene insulated; full color code; polyethylene belt; 5-mil longitudinal copper shield; polyethylene jacket.



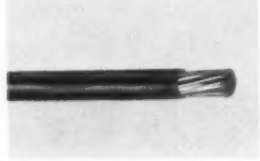
**Anaconda Type BW Buried Distribution Wire (No. 19 & 16 Awg).** Two conductors, parallel; insulated with polyethylene; oval in shape; flat-steel wire serving, asphalt coating, Densheath® jacket.

**Anaconda Type RD Rural Distribution Wire (No. 19 Awg).** Conductors insulated with polyethylene, jacketed with color-coded Densheath; pairs assembled around polyethylene-covered support wire.

**Anaconda Type SD Suburban Distribution Wire (No. 22 Awg).** Conductors insulated with polyethylene, jacketed with color-coded Densheath; pairs assembled around polyethylene-covered support wire.

**Anaconda Type UD Urban Distribution Wire (No. 24 Awg).** Densheath-insulated conductors; color-coded pairs assembled around polyethylene-covered support wire.

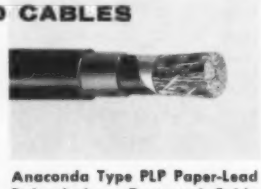
**Anaconda Type CR Single Pair Parallel Distribution Wire (No. 14 Awg & .080" Copperweld).** Two conductors parallel; insulated with high-molecular weight polyethylene, oval in shape.



**Anaconda Type IC Inside Telephone Cable (No. 22 & 24 Awg).** Densheath-insulated inside telephone cable; nonfading color-coded pairs with corrosion-resistant Densheath jacket overall.

## PAPER-INSULATED CABLES

**Anaconda Type PL Paper-Lead Cable (No. 19, 22, 24 & 26 Awg).** Single-paper-tape insulated telephone cable, paper core covering over assembled pairs; antimony-lead sheath overall.



**Anaconda Type PLP Paper-Lead Polyethylene Protected Cable (No. 19, 22, 24 & 26 Awg).** Paper insulated, paper core covering, assembled pairs; antimony-lead sheath, polyethylene jacket.

**Anaconda Type PLJ Paper-Lead, Jute-Protected Cable (No. 19, 22, 24 & 26 Awg).** Single-paper-tape insulated, paper core covering over assembled pairs; antimony-lead sheath; jute serving overall.

**Anaconda Type PLBT Paper-Lead, Tape-Armored Cable (No. 19, 22, 24 & 26 Awg).** Paper insulated; antimony-lead sheath; impregnated-paper tape; jute; flat-steel tapes; nonadhesive coating.

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sites so that transmitters and towers can be more easily transported as they become available.

During the next four months, 15 engineers, five each from the three countries, are to come to the United States to take courses in operation and maintenance of the microwave system.

The U. S. firm of Television Associates, Inc., of Indiana, will supervise engineering work on the new telecommunications system from Teheran for the next six to eight months, with branches in Karachi and Ankara.

The report stated the microwave system is expected to make a major contribution to the growth of commercial and cultural relations among the Pact nations (now handicapped by inadequate communications) as well as with the rest of the world.

For example, the three Pact countries agreed to a substantial reduction in telegraphic rates for the press — down 43 per cent between Pakistan and Iran, which, it is expected, will increase the flow of news and information.

## Chicago Science Student Wins Bell Labs Trip

A young electronics fan who likes to work with transistors and solar batteries left Chicago on July 13 to visit the place where both were invented—Bell Telephone Laboratories, Murray Hill, N. J.

He is Charles Ehrhardt, a freshman at Chicago's Waller High School, who was awarded the trip by Illinois Bell Telephone Co. for his electronics exhibit which won first place in the general science division of the Chicago Public Schools' 1959 Student Science Fair.

Charles plans on a career in electronics. He would like to study at either Massachusetts Institute of Technology or California Institute of Technology, when he graduates from high school.

His prize-winning exhibit demonstrates how both solar batteries and transistors play an important role in sending back to earth information gathered by U. S. satellites in outer space. It also incorporates a radio receiver and transmitter and an oscilloscope.

"I first got interested in electronics through a friend who was a 'ham' operator," Charles says. "Now I've got my own 'ham' station and from that I've become interested in other phases of electronics."

He dropped in on Illinois Bell President W. V. Kahler the other day to show him the exhibit. Mr. Kahler, an

Charles Ehrhardt (right), Chicago Waller High School freshman, recently showed his prize-winning student science fair exhibit on electronics to Illinois Bell Telephone Co. President William V. Kahler. Here Charles shows Mr. Kahler a transistorized radio transmitter. On July 13 Charles took a trip to Bell Telephone Laboratories in Murray Hill, N. J., a special award made possible by Illinois Bell.


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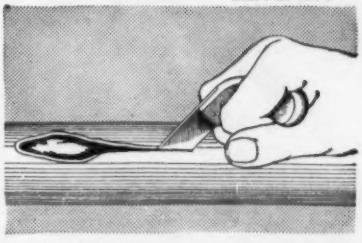

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engineer himself, was an interested observer as Charles explained his exhibit and put the equipment through its paces.

In 1958, Mr. Kahler was chairman of the Chicago Student Science Fair business-education committee.

## Bell System Net Income Exceeds Billion Dollars

The American Telephone & Telegraph Co. reported on July 10 that 12-months' earnings of its Bell System applicable to parent company stock passed the one billion-dollar mark for the first time.

General Motors Corp. is the only other American business to reach that profits plateau. It posted net income of $1,189,477,000 in 1955, a peak it has been unable to reach since.

For the 12 months ended May 31, the Bell System achieved a net income of $1,074,390,000 of which $1,041,533,000, equal to $4.94 a share, is applicable to AT&T stock. This compared with $875,517,000 of which $851,574,000, or $4.39 a share applied to AT&T stock for the previous year.

The Bell System had gross operating revenues of $7,036,389,000 for 12

## Answers to Questions On Page 41

**(1) Yes.**

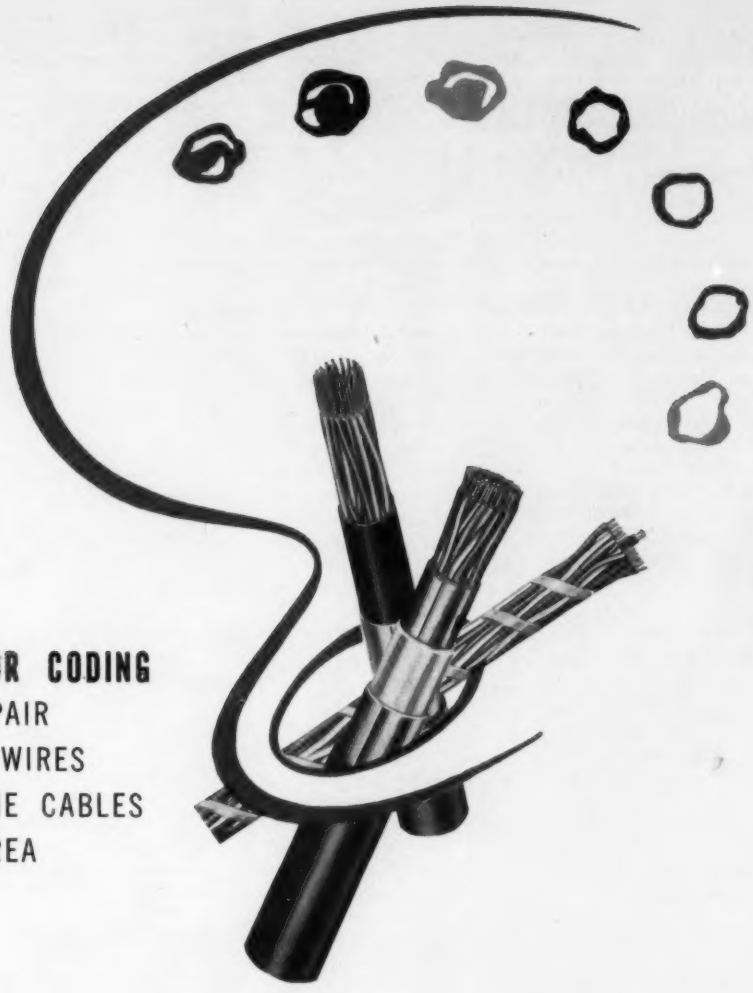
**(2) The operator will say, "All right, thank you," and try to reach the party at the alternate telephone.**

**If he is not there, the operator will determine when he is expected and will, if necessary, give the calling telephone the report from each telephone. She will also ascertain if the calling party will place his call again or whether she should leave word at either or both telephones.**

**(3) The operator will ask, "Would you (or 'he') care to talk later?"**

**(4) If the called party is not expected at any future time, the operator will enter the information on the ticket, give the report if necessary, and proceed as directed.**

**(5) The operator will leave word, clear the circuit, and cancel the ticket. She will then give the report to the calling party, saying, "Mr. (called party) is going to a different telephone. I will call you when he reports" and release the calling line.**



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months compared with $6,481,812,000 for the preceding period.

Bell's consolidated net income applicable to AT&T stock for three months ended May 31 rose to a record $281,252,000 or $1.32 a share from $226,822,000, or $1.16 a share in the same three months a year ago.

The pre-share figures are on the new shares, after a 3-for-1 stock split this spring. The average number of shares was 212,561,365 at the end of May compared with 196,301,049 (on the split basis) a year earlier.

In his quarterly report to stockholders, Frederick R. Kappel, AT&T president, said business has expanded faster in recent months than at any time in the last few years.

The Bell System will have gained 800,000 new telephones in the second quarter when all figures are in, Kappel predicted. About 725,000 new telephones were added in the first quarter.

He also reported long-distance conversations have risen more than 10 per cent over a year ago.

## General Directory Company Has Publishing Conference

The publishing managers of the General Telephone Directory Co., from Tampa, Fla.; Long Beach, Cal.; San Angelo, Tex.; Spokane, Wash.; Vancouver, B. C., and Des Plaines, Ill., held a three-day meeting in Des Plaines, June 29-July 1.

O. D. Swanson, vice president-production, stated that the purpose of the meeting was to review all procedures and forms to ascertain that the most accurate and effective procedures were being used by all publishing offices, and that standardized procedures and forms were used whenever possible.

The meeting was opened by Wesley H. Loomis III, president of General Telephone Directory Co. who explained the importance of publishing in the complete directory operation. He emphasized publishing's responsibility in assuring accurate directories and noted recent improvements in the reduction of errors.

Those in attendance were:

O. D. Swanson, vice president-production; Dean R. Porter, publishing manager; Frank Broniarczyk, printing superintendent; R. J. Seibt, assistant publishing manager; Richard G. Fick, production supervisor; John P. McMinn, schedule coordinator; Paul P. Siegert, methods & procedures analyst, all from Des Plaines.

J. E. Griffenhagen, publishing manager, Long Beach.

G. H. Koenig, publishing manager, San Angelo.

W. L. Phillips, publishing manager, Tampa.

Carl E. Nuss, publishing manager, Spokane.

C. W. Nielsen, assistant publishing manager, Long Beach.

Rex C. Schofield, publishing supervisor, Vancouver.

Several members of the Des Plaines administrative staff participated in portions of the agenda, as did other Des Plaines publishing personnel.

## Complete Deep-Sea Section Of U. S. - Europe Cable

Laying of the deep-sea portion of the first telephone cable system to link North America with the mainland of Europe was completed on July 12.

The final splice of the transatlantic segment of the twin-cable system, between Penmarch, France and Clarenville, Newfoundland, was made on the deck of the cableship Monarch 10 miles off the coastline of France.

The long lines department of the American Telephone & Telegraph Co. said only a 326-mile shallow-water portion of cable from Newfoundland to Nova Scotia remains to be laid.

The two-cable voice link—one for each direction of speech—will carry upwards of 36 simultaneous conversations to France, Germany, Belgium, Netherlands, Switzerland, Italy and Spain.

American Telephone & Telegraph Co., the French Ministry of Posts, Telegraphs & Telephones, and the German Federal Ministry of Posts & Telecommunications are building the 2,400-mile cable system at a cost of about 40 million dollars.

The five months of deep-sea laying operations were begun by the Monarch in March.

The Ocean Layer, owned by Submarine Cables Ltd., took over on June 7. Two weeks later, however, operations were halted temporarily when fire broke out and razed the cableship 600 miles off the coast of France.

A German vessel rescued all of the

**Present at the recent General Telephone Directory Co. publishing department conference in Des Plaines, Ill., were (left to right) seated: Thomas W. James, trade mark publishing supervisor, Des Plaines; John E. Griffenhagen, publishing manager, Long Beach; Ronald J. Seibt, assistant publishing manager, Des Plaines; Walter L. Phillips, publishing manager, Tampa; and (the following four of Des Plaines) Dean R. Porter, publishing manager; O. D. Swanson, vice president-production; Wesley H. Loomis III, president; and Frank W. Broniarczyk, printing superintendent. Also, G. H. Koenig, publishing manager, San Angelo; John P. McMinn, schedule coordinator, Des Plaines; and C. W. Nielsen, assistant publishing manager, Long Beach. Second row seated (left to right): H. Duncan Price, Jr., director of public relations, and G. L. Hedberg, production supervisor, both of Des Plaines; Rex C. Schofield, publishing supervisor, Vancouver; and Scott B. Ball, production supervisor; Paul Siegert, methods & procedures analyst; and Edward F. Summers, services and supplies supervisor, all three of Des Plaines. Standing (left and right) are Carle E. Nuss, publishing manager, of Spokane; and Richard G. Fick, assistant publishing manager, of Des Plaines.**

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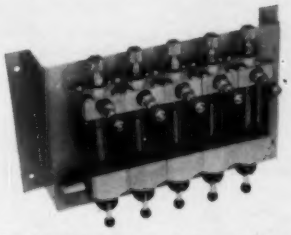

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98 crewmen. Within a few days the Monarch was readied to resume operations.

The cable was laid from Penmarch in Brittany by the French cableship, Ampere.

One cable, which will carry voices east-to-west, was put down in three sections between March and early June. The recently completed cable is for west-to-east speech.

Tests are now being made over the transatlantic segment of the system. Service is scheduled for this fall.

## IN THE NATION'S CAPITAL

*Continued from page 20*

snatcher" compares what the rate would have been (under one classification) with what it actually was (under another classification). And if there is a difference favoring the customer, he goes in and makes his deal. Sometimes he gets a number of customers together and files a complaint for the whole group for a rate reduction and rebate.

Several years ago the Florida commission referred to such activities as "barratry," which is the old common law reference to practice of starting up litigation in which one has no personal interest in hopes of getting a reward. There is no parallel here, of course, to the GSA employes who were especially assigned to the SAGE rate case and, therefore, had not only an interest in it but a duty to see it through.

### *Private Mobile Question*

Readers of this department will recall the two-year fight over whether the Bell System companies could validly render private mobile telephone service on a leased maintenance equipment basis without violating the AT&T consent decree. It was under this decree that the federal government withdrew its anti-trust suit in 1956, thereby permitting Western Electric to remain as the manufacturing subsidiary of the Bell System, provided it confines its operations to regulated telephone service.

It may also be recalled that the Justice Department contended that it was a violation of the consent decree for Bell System companies to continue to render private mobile service on the lease-maintenance basis. And, AT&T finally withdrew tariffs filed with the FCC covering that class of service. Following up this step on the national or interstate level, the Pacific Telephone & Telegraph Co. attempted to withdraw parallel intrastate tariffs for private mobile service filed with the California commission. The difference here was that the California commission had already found that such service was a necessary and proper part of Pacific's telephone service; and the California Supreme Court had upheld that decision.

Now, comes the California commission refusing to permit the Pacific Telephone & Telegraph Co. to withdraw tariffs for such service. It points out that there is an increasing need for private mobile service in California and that the company is able to render that service legally as well as physically. In other words, the commission feels that the California tariffs do *not* violate the terms of the 1956 consent decree.

Where does this leave Pacific Telephone & Telegraph? Offhand it would seem to leave the company pretty much up in the air. The company has been told that if it does not wish to continue the tariffs, which are now in effect until 1961, it will have to file a supplemental application—along with a showing as to why such service should be discontinued after 1961.

The commission said that to permit

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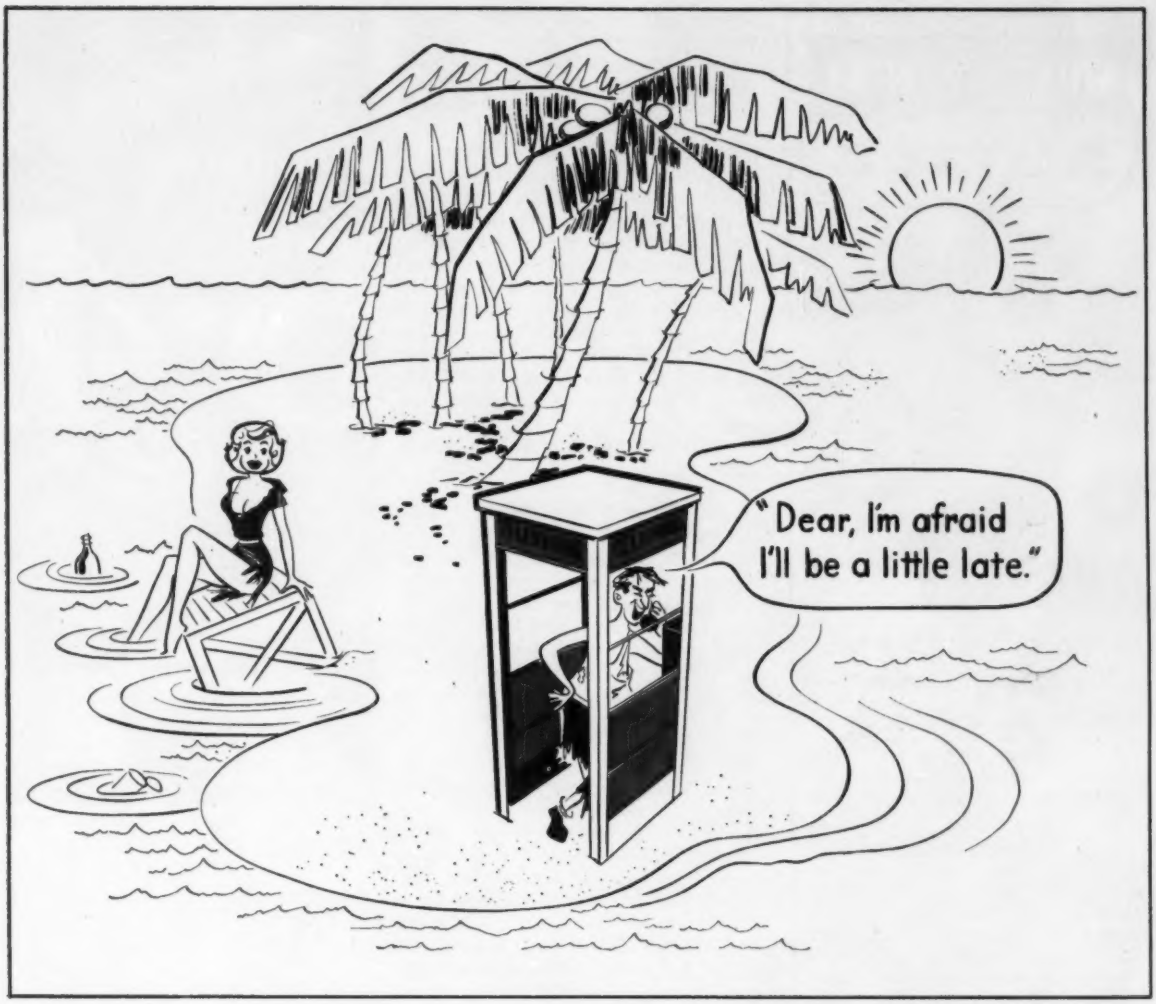


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the company to withdraw its intrastate tariff would not be in the public interest, unless it could show conclusively that the FCC would not grant or renew licenses to California customers applying for such service, or until it could be shown that a consent decree does not exempt California intrastate private mobile service. Inasmuch as the FCC has never actually passed on the question of whether the private lease-maintenance services do (or do not) violate the terms of the federal court consent decree, Pacific Telephone & Telegraph Co. is left in an odd position. It may have to start the legal treadmill all over again, in order to find out just where it stands in California. And, it is conceivable that such a decision might affect its service obligation elsewhere.

### *Dixon-Yates Again*

Remember the old Dixon-Yates "scandal"? This was the 1954 contract between the Atomic Energy Commission (AEC) and the Mississippi Valley Generating Co. (headed by Dixon and Yates) to build a power plant at West Memphis, Ark., to supplement Tennessee Valley Authority power supply. The so-called public power bloc, which feels that all major power expansion should be by government agencies at the taxpayers' expense (or subsidy) raised cain over the very thought of private enterprise in the power business reappearing in the Tennessee valley. They raised so much cain that the city of Memphis decided to build its own power plant (at a cost of more than 200 million dollars, financed by tax-exempt bonds costing nearly 5 per cent interest) instead of taking power from the proposed private power company plant which would not have cost the taxpayers anything, but would have been privately financed at around 107 million dollars.

Anyhow, the federal government retreated on this and canceled its contract. There was a lot of talk about a "scandal" because one of the government advisers, Adolphe H. Wenzell, was also vice president of the First Boston Corp., which later handled part of the financing. Since then the public power advocates never even used the words "Dixon-Yates" without repeating the word "scandal" after it.

But, the Dixon-Yates people did not take this lying down. They sued the government for damages resulting from what was regarded as an unjustified breach of contract. The U. S. Court of Claims has now agreed that such was the case. So, it would seem that Uncle Sam was the villain, and not the power company, if a villain must be found.

The government ownership bloc in

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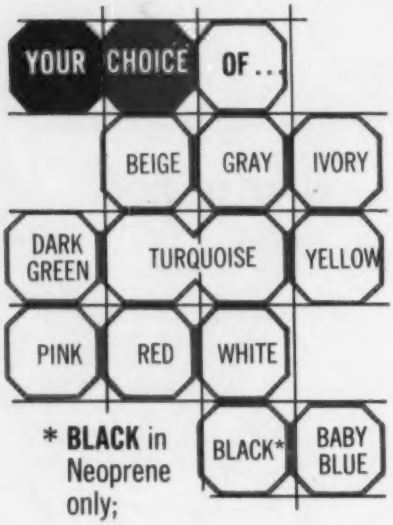


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Congress is angry, but somewhat frustrated, over the court of claims decision in this Dixon-Yates case. The court ruled (3 to 2) that the controversial Dixon-Yates power contract was valid, that the United States had wrongfully and without justification breached its contract obligation, and that the utility company was entitled to $1,867,545 in damages. The ruling comes at a very unclimactic time for the government ownership advocates who have been busily building the so-called Dixon-Yates scandal into an accepted legend that could become the basis for a 1960 political issue.

The majority of the court held that there was no conflict of interest involving Wenzell, who acted as the government's adviser when the contract was being set up. The court said the evidence indicated that Wenzell was not working for the government at the time the contract finally was reached, and that, therefore, he was not involved in a conflict of interest.

We heard a lot about the "Dixon-Yates scandal" in the recent opposition to the confirmation of Lewis L. Strauss to be Secretary of Commerce. Strauss was denounced because he had approved of the Dixon-Yates arrangements. He felt that the government should honor its contract. The AEC, then headed by Strauss, executed the contract with the Dixon-Yates company on Nov. 11, 1954.

In view of the close division of the court's opinion, an appeal is likely to be taken to the U. S. Supreme Court, which would not have an opportunity to pass on it until next year. If the lower court decision should be sustained, the so-called "Dixon-Yates scandal" might even become something of a boomerang. In that event, it might be said that if there is anything "scandalous" about the Dixon-Yates deal, it was the scandalous way the government welshed on its contractual obligation.

Actually, the Dixon-Yates plan might have been a very economic way of supplying the city of Memphis with power. It would not have cost the taxpayers anything. There are a lot of people living in Memphis today who will not live to see the end of the backbreaking bonded obligation saddled on that city to please the vote-seeking politicians.

## Superior Cable Appoints Grissinger in Kansas City

The Superior Cable Corp., Hickory, N. C., has announced the appointment of Zea J. Grissinger, 6113 North Michigan, Kansas City, Mo., as a salesman in the Kansas City area.

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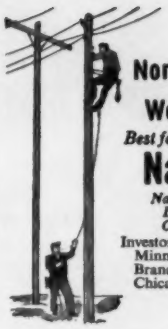
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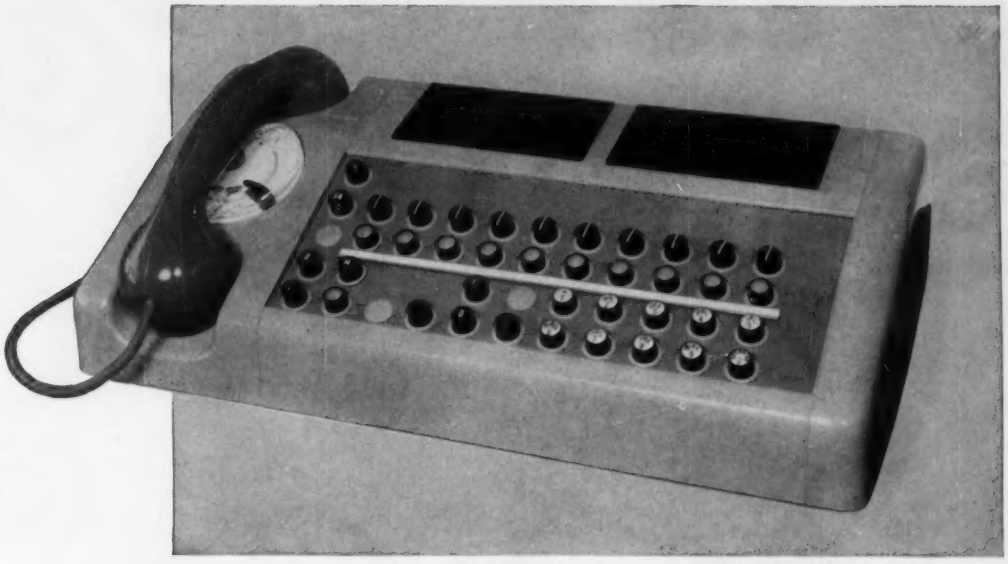

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